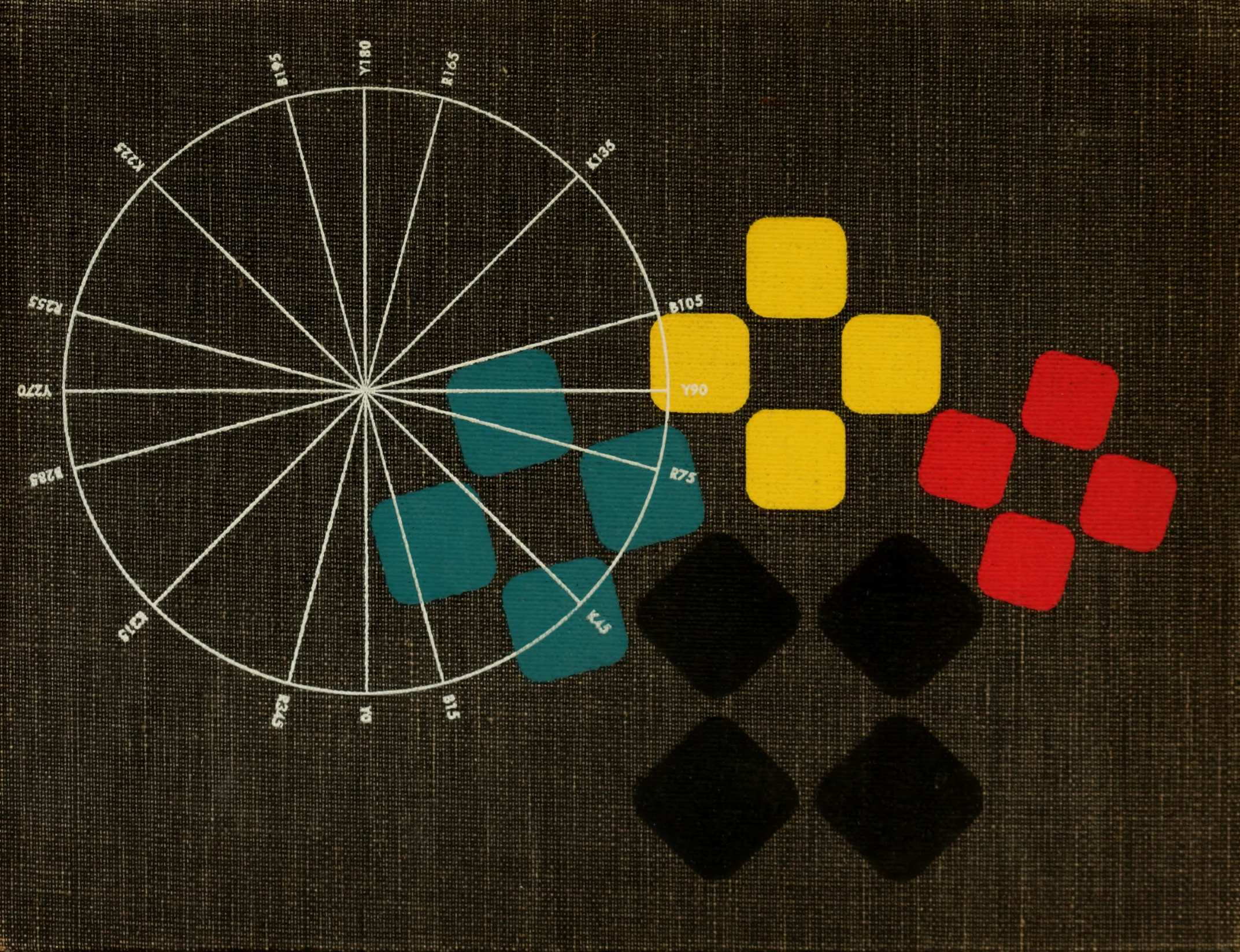

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The Cover

The cover of this year's Production Yearbook was designed to symbolize one of the dominant themes of this volume—color and the amazing possibilities that have been opened by recent advances in color processes and techniques.

Each spot of color on this cover represents an enlarged halftone dot—symbolically of course, not literally. They are reproduced in the four basic colors of four-color process printing—red, black, yellow and blue.

Furthermore, each respective dot group is placed at the relative screen angle that is used in making a screened separation negative. The angles are indicated on the white circular diagram.

As anyone familiar with color printing knows, if the dots of each color were all printed at the same angle, a distracting pattern or "moire" would result (Page 116).

Introduced by the cover, the theme of color continues throughout the volume. The end leaves are of the red process color, and the various divisional index pages also carry out this same theme with the red, blue and yellow. The halftone dot also plays an important part on these divisional pages.

Utilizing a striking four-color Picasso painting, the title page shows each of the process plates separately printed in its corresponding color and repeats the set of red, black, yellow and blue dots.

In addition, the designer has combined a unique arrangement of the California typecase and the words "Production Yearbook." It's as though "tracers" had been made of the compositor's hand as he picked each individual type letter to set these two words, again using the process colors to print the lines. (Page 429.)

Incidentally, if you like the cover and want to preserve the colorful design, we'll be glad to send you an attractive plastic transparent Cover Protector with heavy reinforced edges, specially made for this purpose. Just send your check or money order for $1.50 to cover cost and mailing to Colton Press, Inc., 468 Fourth Ave., New York 16, New York.

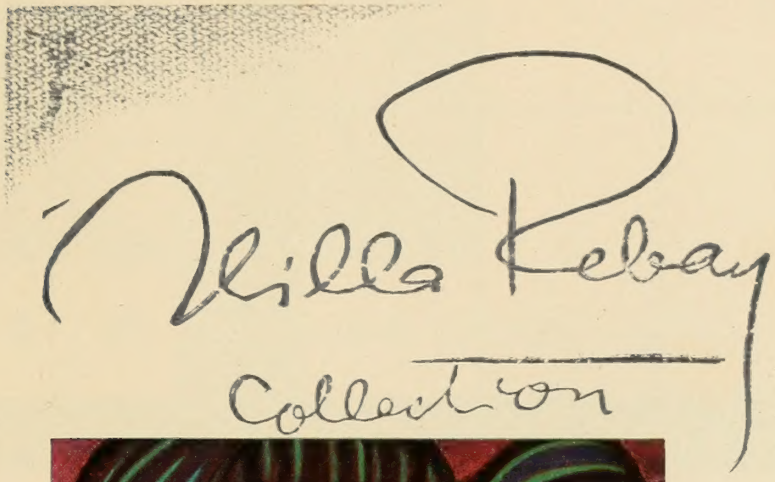


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Eighth Graphic Arts

Production Yearbook





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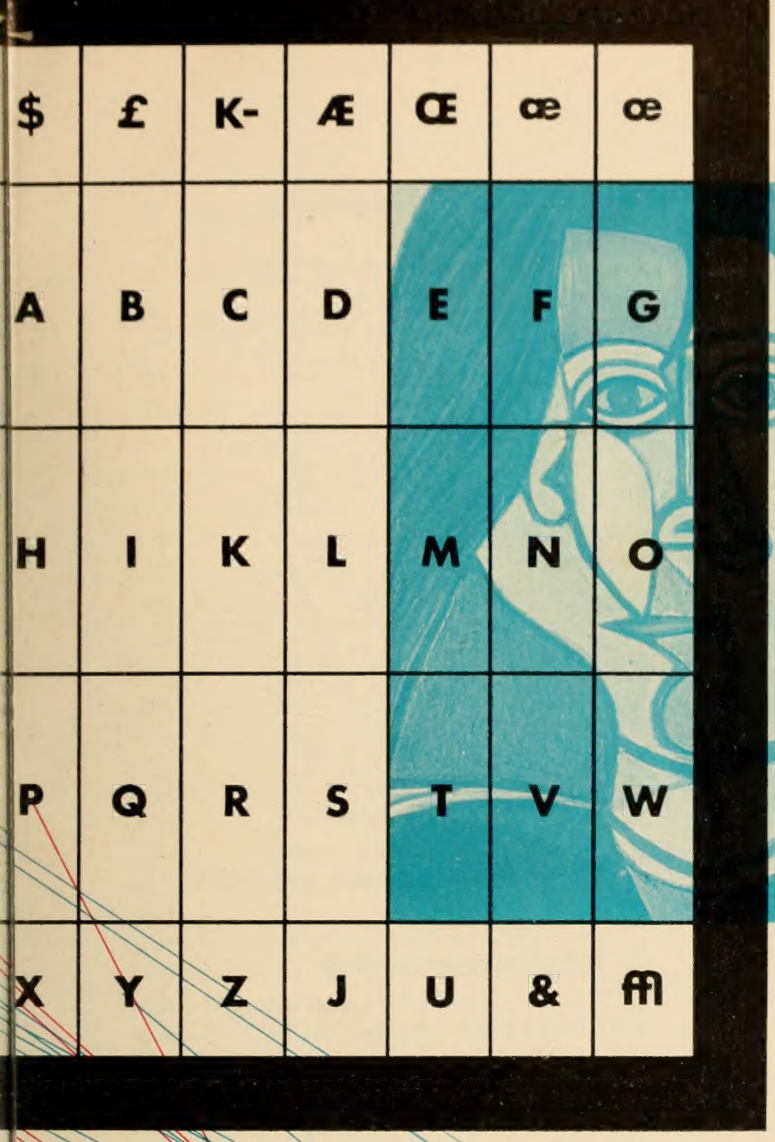
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Bradbury Thompson



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Eighth Graphic Arts



Production Yearbook









Eighth Graphic Arts

Production Yearbook

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A prefatory note

Few people have the patience to read the foreword of even the most interesting book.

So, go ahead and browse through this new edition of the *Production Yearbook*. Have a look-see at the articles, charts, pictures, diagrams, tables, and the examples of every kind of printing reproduction. And then when you feel so disposed, come back to this page to "pause for station identification."

This year our theme is color—the vast possibilities that have opened up for the use of color in all branches of the Graphic Arts, the means that have been placed at the disposal of all buyers of advertising and printing for this medium, and the many production improvements that have made it generally available.

This theme is touched off by Bradbury Thompson's cover design with its striking process plate pattern and photo-engraver's screen angling symbol, together with the title page arrangement. The theme is woven through the book's design, re-emphasized with its array of inserts embodying every known process of reproduction, and climaxed by the demonstration of color layout in the Art and Photography section.

Equally important at this time is the record of graphic arts progress and achievements detailed in these pages—new equipment and techniques, new processes and materials, pre-makeready, plastic plates, electronic printing, three-dimensional printing, fourteen-color printing at one time, setting type by photography, and so on. All of these you will want to know more about, and we hope the discussions will be revelatory.

A new concept in type visualizing will be found in our Typography section. This new gadget, devised by Edward M. Gottschall for readers of the *Production Yearbook*, is capable in its present form of some 70,000—count 'em!—combinations of display and text type, and we feel confident it will have endless possibilities for the type user.

Fingertip estimating tables permit the fitting of type, calculating costs of engravings or electros, judging sizes of enlarged or reduced copy instantly, accurately and without using a pencil or doing any calculating.

Actually, space forbids our mentioning everything else that's new and different in this edition. The reader will undoubtedly want to discover some of these things for himself.

Meanwhile, those old standard features, for which *Production Yearbook* has been best known, have not only been retained but have been considerably revised, amplified, and brought up to date. We're referring to the multitude of diagrams, the pictographs illustrating every graphic arts process, the Master Paper Selector, the Omnibus of Type Faces, the Art Techniques by Clarence P. Hornung, and the many, many charts and tabular compilations. All are here again and better organized for the user's need.

About as pleasant a task as pointing out the salient features of this book is that of according credit to those whose endeavors have made it possible. We're proud of, and personally grateful to, those with whom we've been privileged to work—Mr. Gottschall, whose zeal, graphic arts knowledge, and production ability were vital to this book; Mr. Thompson, whose high standards of design were an inspiration; Clement L. Moon, who lived and dreamt *Production Yearbook* through many months of hard work; and Daisy Rieger, whose advice, suggestions, and cooperation in this year's edition, as in other previous ones, were an invaluable asset.

Our deep appreciation goes also to what has seemed to us a vast army of well-wishers and active cooperators: our staff of associate editors, J. S. Mertle, Harry A. Groesbeck, Jr., Eugene de Lopatecki, Charles V. Morris, Clarence P Hornung; the long roster of technical advisors and the hundreds of experts and authorities, whose days were busy enough as it was but were made immeasurably more complicated by our demands on their time.

To the many other sources of information we've mentioned in our Authors and Acknowledgments (pages 581-584) and to the graphic arts craftsmen responsible for the physical production of the book—Harold M. and Richard Davis, Harry Wolfe, M. J. Baumwell, Frank Fortney, and Randall Bergmann—we hereby give our sincere thanks.

Leo H. Joachim

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Art and photography

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Thumb-dex patent 2300623
Other patents pending

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Light and color

Understanding of wave theory of color and its practical applications explains problems in matching colors of printed piece with those of the original

Harry A. Groesbeck, Jr.

A problem almost every production man is called upon to solve is that of matching the colors in a printed reproduction with the colors of an original article such as an oriental rug, a flower, a cosmetic shade, a dress, or even the uniform duplication of a trade-mark. These color matchings may be reproduced on a package, in direct mail pieces, and in many magazines.

The purpose of this article is to develop an understanding of how this color matching is done by current commercial reproduction processes and to create an appreciation of why precise matching is frequently difficult, if not impossible, to achieve. Such an understanding of color matching begins with light itself, and ends with the printed reproduction.

The wave theory

Scientists in general agree that light consists of waves, and that these waves vary in length, although they have not yet determined of what the waves are made. There has been great progress since the development of this theory, and the waves now are designated as the "energy spectrum."

Although these energy waves may vary tremendously in length, they all have the same velocity or speed—approximately 186,000 miles a second. This similarity is what makes it seem appropriate to group or classify them all together as members of the energy family.

Wave lengths

Some of these waves, as with those of radio, may be half a mile or more in length when measured from crest to crest; other radio waves may be but a few meters in length. The waves of radio heat are still shorter; those of infrared, visible light, and ultraviolet are so short that they are measured in ten-thousandths of a millimeter. X-rays, cosmic rays, and gamma rays are infinitely shorter than those of light.

Wave length constitutes its frequency; or, to put it another way, it relates to the number of its wave crests or ripples in a given distance. A long wave radio vibration measuring 1,000 meters from crest to crest has just one long ripple in 1,000 meters. Another wave, measuring but one meter from crest to crest, will vibrate 1,000 times within the space of 1,000 meters.

Despite the variations in length, the uniformity in velocity means that if a long and a short wave are started from the same take-off mark, each would reach a point 186,000 miles distant in one second, but in making the trip, the shorter wave would have rippled many times more than the longer one. It would be not unlike a long-legged man walking with a short-legged man; both might be covering the same number of miles an hour, but the short man would have to take more steps than the other fellow.

Light waves

Of all the waves in this energy spectrum, the only ones of immediate interest in this article are those that cause the sensation of vision. They are the light waves.

There are almost 4,000 different lengths of light waves. Because they travel at the same rate of speed, they arrive at the eye simultaneously, and the result is that what is seen is the sum total of all the waves that reach the eye. When every light wave of the solar spectrum reaches the eye at one time, "white" is seen. A lesser number of wave lengths acting on the eye simultaneously produces the effect of "color."

These light waves are microscopically small and are measured in millimicrons, which are one-millionths of a millimeter. As there are approximately 25 millimeters to the inch, this leads to extremely fine measurements to differentiate between one light wave and another.

Few considered

It is an accepted theory that only the waves of the energy spectrum, which cause the sense of vision, shall be considered as being light waves. The shortest of these waves are about .00039 of a millimeter in length, and the longest approximately .00076 of a millimeter.

It is difficult to get on friendly terms with light waves when they must be considered in such ultrascientific detail. Consequently, for practical reasons, only a handful of the total are considered, and these are the ones that bear descriptive names in place of numbers.

Colors

Little waves of .00039 of a millimeter length actually stand for the color sensation that to the eye is a deep violet. This is the color at one edge of the rainbow, or spectrum. It is the shortest wave length that can be seen and identified as a color. The longest visible waves, those of .00076 of a millimeter, are deep red, and their position is at the extreme other end of the spectrum band.

These are the two colors that border the edges of the rainbow; in between, the many other waves of varying length act upon the eye in such a manner as to enable many colors to be "seen."

Although it is possible to measure each of these wave groups, each difference of color that their length controls is too subtle for the human eye to distinguish. Usually only seven—the easily identified colors of the rainbow—are considered: violet, indigo, blue, green, yellow, orange, and red. In between there is a gradual blending of the colors, so that while there are no sudden, sharply delineated separations, these seven are the most prominent to the eye.

Subtractive color

These seven spectrum colors, together with their associated color waves that lie between the groups, when combined and projected to the eye so that all are seen at one time cause the visual sensation of "pure white."

This at first may be difficult to believe, but it can be proved by passing a beam of white light through a prism; the beam immediately will become separated into

the seven spectrum colors. As additional proof, seven projection instruments, each one of which throws one of these seven colors to a white screen, can be set up.

When each of the seven colors falls simultaneously on the screen, the combined sensation of their seven different wave lengths will be a complete white.

What is white?

White is that visual sensation caused by all of the different wave lengths of the solar spectrum acting simultaneously upon the eye. This is the so-called "additive" feature of color vision.

What, then, is color?

Color is the visual sensation caused by a lesser number of the wave lengths than are required to produce the sensation of white. Color is "white" with some essential waves subtracted or otherwise eliminated. The removal of these waves constitutes the "subtractive" phase of color vision.

A simple little picture of white and color may lead to a better understanding of this complex situation. On a clean, white, painted wall in the bright summer sunlight are bright colored flowers of red, yellow, and blue, with green leaves. The only source of light for this picture is sunlight, and in it the wall will be a dazzling white. Yet in this same light, the flowers and leaves all will be of different colors.

The explanation is that each leaf, each different flower, each petal has the property of absorbing and hiding from the eye some of the waves that the white light casts upon them. At the same time, the same flowers, leaves, and petals have the property of reflecting all the light waves that have not been absorbed. These are the ones that are seen, and the colors of the flowers that reflect them correspond in an exact manner to the color length of these nonabsorbed waves.

The theory in practice

The significance of this to the printing production man and to the craftsman is as follows:

Since the light that is seen—the color that is being matched—is not an addition of several colors or inks but a subtraction from the original white, a color match must not be expected unless the source light for both the original and the reproduction is pure white, or unless the light for both deviates from white in precisely the same manner and same extent.

Furthermore, since the colored inks on the paper in printing serve not to put color on the paper but to take color away from the white of the paper (the inks are transparent in most commercial printing), the faithfulness of the color match depends first upon the pure whiteness of the paper.

From the full range of colors available, it became the printer's problem to select those that would permit him to efficiently reproduce an original. The more colors he used, the more nearly he would duplicate the original, but the more costly and time-consuming the job would become.

To combine quality with efficiently standardized and economical operation, three colors were selected. The three were so spaced in the visible spectrum that by combining them, the other colors could be produced. The general range of seven colors is: violet, indigo, blue, green, yellow, orange, red.

Printing colors

The colors selected for printing—blue, yellow, and red—were relatively evenly distributed in the spectrum in relation to the seven primaries.

Since each color, when printed upon white paper, acts as a filter to absorb some light waves and to permit others to reflect from the paper to the eye, consideration should be given to how the three selected printing colors permit the obtaining of a wide variety of color effects.

A blue ink, for example, absorbs those light waves that are not what is called blue, but permits the eye to receive a sensation described as blue. The application of red or yellow ink has a corresponding effect.

To obtain green, however, both blue and yellow are printed, thereby filtering out more waves than either the blue or yellow by themselves. In a similar manner, a combination of red and yellow will give orange, and red and blue will produce the effect called purple.

In halftone work, these transparent inks are printed as a mass of superimposed (in ideal conditions) dots. To obtain subtler color combinations, the amount of ink on any one of the three colors can be varied in a given area by increasing or decreasing the size of the dots in that area, by eliminating them entirely, or by making certain areas solid for certain colors.

Since the eye does not detect the printed piece a dot at a time, the cumulative effect of increasing or reducing the amount of any color from one section to another results in what appears to be a subtle change in color. In this manner, the printer actually creates the illusion of many colors by employing only three.

For a more precise control over detail in a color subject and to better reproduce the type matter, most color printing is done in four colors, the so-called key plate or detail control plate being in black. The black used is lighter than that in ordinary black-and-white work, and the three other process colors are adjusted correspondingly.

There are several conditions and reactions connected with this color principle, and all of them are closely related.

Viewing proofs

The light by which any object is seen is the contributing cause of the color in that object. A red rose will be red only if there are red wave lengths in the light by which it is viewed. If this light happens to lack these red waves, the color of the rose will be minus just the amount of red that is missing from the light.

If the red rose is taken into a room illuminated only with a green light, it will appear to be not a red rose but a black one. Should the rose be placed on a sheet of white paper and viewed by the red light in a photographer's darkroom, the rose and the paper will be almost exactly the same color of red as the red light, but the green leaves will be black.

All the flowers in the previously-mentioned picture against the white painted wall will appear to have changed color somewhat if viewed just before sunset. As the sun approaches the horizon, its beams lose some of their color waves by being absorbed in passing through the atmosphere at such an angle. If the sky is overcast, or if there is a yellow mist of smoke and fog, some color waves will become absorbed and the colors of objects will appear to be changed.

Artificial light

Many kinds of artificial light are lacking in color waves and consequently give incorrect color values to objects seen by this faulty illumination. For this reason, it is particularly important to view the reproduction and the original together, under the same lighting conditions, wherever possible. When this is not possible, some allowances must be made.

The ability of different objects to absorb some color waves and reflect others is subject to change. A leaf that is green in the summer may be red, yellow, or even brown in the autumn; a wet surface will absorb and reflect colors differently than when it is dry.

The human reactions to color waves are not all alike. Persons with so-called normal vision can be expected to see and recognize similar colors with accuracy and reasonable uniformity. But all eyes are not normal; there are many different degrees of color deficiency. It may be difficult to have a client see the beauties of color in some reproduction if his color reactions are entirely different from the production man at the ad agency.

Indirect lighting

Indirect lighting can have considerable effect upon colors. For example, a finished result of a critical job may be finally passed upon in the clean north light of the shop. The client's office also has a north light, but before it enters his room it has been reflected from an adjoining red brick wall. It no longer is a white light, for it has been contaminated by that red wall, and the submitted color proof may receive considerable undeserved criticism. Furthermore, the proof was viewed in the shop at 11 A.M., and the client did not look at it until 4:30 P.M., when the light had changed.

These are some, but by no means all, of the essential factors involved in color vision. They should be known, at least in outline, because workers in the Graphic Arts must be able to reproduce color, and usually with substitute materials. That dazzling white painted wall may have to be replaced by a sheet of paper that is not as white as desired; the highly colored flowers will be represented by colored printing inks; and the light by which the combination may be viewed may not be a pure white.

Color in photography

In photography, a number of different reactions to light color waves are encountered.

Photographic emulsions, as used on plates, films, and photographic papers do not show color after they have been exposed and initially developed. They yield varying densities in their negative exposures, and these are related to the intensity of the light to which they have been exposed and the length of the light waves that have produced them.

These emulsions are usually more sensitive to the shorter, cool waves such as blue, than they are to the longer or warm waves such as yellow and red. Density, or the degree of blackness in the negative, becomes reversed when making a print; consequently, a dense area resulting from exposure to a sky blue will be a light area when printed on a photographic paper. Color results from supplementary operations (such as dyeing the different negatives, positives, or layers of transparency) and is controlled, but not produced by these original negative densities.

When a blue sky comes up light in a print, the inference may be that "it does not photograph." A little consideration of what has happened will show that it has photographed too much. Sky blue is a highly actinic color, and the density it produces in a photographic negative is practically the same as though it were white.

This is a helpful factor in the line process of photo-engraving, where it is permissible to mark line copies with a light blue pencil, or to indicate, in light blue, certain areas to be shaded with Ben Day or similar media. Although the blue markings are evident to the eye, they disappear when the negative is developed, because they have practically the same actinic values as white.

But in the photo-engraving process, blue markings for purposes of instruction or guidance should be held to a light blue. Dark blues, especially those that are warm in color, may not disappear during exposure, and consequently can cause difficulties at a later time.

Use of filters

In snapshots of landscapes, with blue sky and white clouds, the clouds are likely to be lost because the blue of the sky photographs as though it were white and the clouds disappear because the contrast between clouds and sky has been lost.

This fault can be corrected by using a yellow filter on the lens. This will restrain the actinic qualities of the blue and make it "photograph less." The sky will then be darker and the lighter clouds will show, by contrast.

As colors become warmer and the wave lengths longer, the photographic reactions become diminished, often making it necessary to employ photographic emulsions specially sensitized to respond to these less actinic hues. Such emulsions are called "orthochromatic" or "panchromatic," and with them, through various kinds and colors of filters, the relative density values of all colors can be held.

Special emulsions and filters make it possible to photograph by what is popularly called "invisible light." This would be the ultraviolet or the infrared. The methods are of especial value in detecting certain types of forgeries and for making photographs "in the dark," with no light visible to the eye.

Reproducing color

It can be said that color reproduction consists of two stages. The first is to obtain accurate photographic values in separation negatives. These have no color, but if properly made they will have the relative tone values that will be used to control color at a later stage.

If the process is limited to a color photographic print, its color will enter the picture in the making of the prints in yellow, red, and blue and their superimposition in register. The quality of the colors used in these photographic printing processes is established by the manufacturers of the materials used, and usually leaves little to be desired.

But if the problem is one of making process color plates, and printing them on paper with ink, the story may end quite differently.

Privately printed pieces, in which the paper, inks, and kind of presswork may be planned to yield the exceptional in color plate making and printing, have resulted in some of the most outstanding color productions of our time. A notable example is the book reproducing the collection of Mellon and Kress paintings and art masterpieces published by the National Galleries in Washington.

Magazine color

Publicly printed pieces, if this term may be used, are those pages of illustrated publications such as Life and the Saturday Evening Post. In these, the color of the paper, the ink colors, their rotation, and the press speed all are fixed in advance by the publication. These materials cannot be changed and, considering the size of the editions and the speed with which they are turned out, they are amazingly good.

But while the materials and methods are fixed and rigid, the colors of the copies to be reproduced are not. These may be anything from an old master to the last word in modernism, and it re-

quires a keen knowledge of the mechanical requirements of the publications and an appreciation of their production aims, to do justice to the variety of copies selected for reproduction in these pages.

Often, the printing requirements of several publications on a schedule differ sufficiently so that a set of four-color plates that will give the desired results in one will not give the same color values in another, despite the fact that the plates were proved in the rotation and with the inks, paper, and specifications for proofing supplied by the respective magazines or periodicals.

Duplicate originals

It is too costly for the normal budget to make separate originals for each, and it is doubtful whether this would be the solution. One answer is to make the originals for the publications that will receive them, and to make duplicate originals (See Cross-Reference Index) for the other publications.

The duplicate originals, if so ordered, can be made so that they can be specially corrected to lighten or darken the area of the plates deemed to require such modification for the other publications.

One of the ultimately most important factors in all color printing is the paper on which the subject is to be reproduced. This sheet of paper is the last light source before the subject reaches the retina of the eye.

The light by which the page is seen may be perfect, the various stages of manufacture may have been carried out with precision, but if the color qualities of the paper omit some essential color waves of light, these waves will be missing from the picture as definitely as though they never had existed.

So that the proof will serve as a reliable index of how an advertisement will print, it is therefore a "must" that color proofs be pulled on the same stock used by the magazine or periodical, or to be used by the commercial printing plant.

Printing inks

The next set of considerations involves the colors of the inks to be used. In publication printing, these cannot be modified or varied, but must be used as supplied by the publications themselves. If any compromises are needed, they must be made in the plate-making processes. It is interesting to analyze what occurs when process color inks are printed on these pages.

A film of transparent color printed on a piece of white paper does not add color to the paper; it takes certain colors away from the sheet.

A sheet of white paper is like a reservoir of color. If the light falling on it is white and if the paper is white, all the color waves that constitute white will be reflected in the eye and the paper will have the desired white appearance.

Ink acts as a filter

A transparent film of a yellow ink printed on any area of this white sheet acts as a mask or filter. The light by which it is seen has to pass through this film twice—once on its way through the film, and again when the paper reflects it back again so that it can be seen.

Although this light may be pure white before it starts its journey, the only color waves in it that can penetrate a yellow film are those that constitute the color called "yellow." These will be the orange and green waves. All other waves in the light become subtracted by the absorbing powers of the yellow film, and will be completely absorbed before the light reaches the surface of the paper and is then reflected to the eye.

True white paper

When the paper is a true white, those waves that have reached it will be reflected back again without impairment. But if the paper is not white, another subtractive reaction sets in and some additional waves are lost because of color deficiency in the paper. So after this first operation, there are considerably fewer light waves in the printed area than before the ink was applied to it.

Next, directly on top of this yellow area, another ink film of transparent process blue is printed. This will be a somewhat greenish blue such as is used in process color printing. When the white viewing light falls on this new ink film, an entirely different group of color waves is passed through it. They will be the green and blue waves of the color spectrum.

When these green and blue waves reach the underlying film of yellow, they cannot all pass through it. Blue waves will be absorbed by the yellow film, just as the blue waves of a summer sky are absorbed by the yellow "cloud" photographic filter. The green waves, however, will be passed by the yellow, because the yellow is composed of both orange and green waves.

Green, then, is the only color wave that is common to both the blue and yellow films, and consequently it is the only color of white light that is reflected back and eventually reaches the eye, producing the sensation of "seeing" green. Yellow and blue have not "made" green; green is a primary color of light and cannot be "made."

What has taken place is that the transmitting and absorbing properties of the two films, yellow and blue, have acted together to eliminate all light waves except green, so that is the color seen.

If a film of transparent red is added to this combination, the subtraction will be complete. All color waves will be absorbed, and the result will be black.

Subtractive color

All color printing using process inks works on this principle. It is a subtractive process, and to take the most out of it, something must first be put in, which is another way of saying that the process needs white paper to print on, inks of the proper absorption and transmitting properties, and white light with which to see the job after it has been printed.

Color deficiency in process work may be caused by some missing colors in the reflecting qualities of the paper, color waves wanting in the printing inks, lack of transparency in the inks, improper trapping of superimposed colors when printed wet, lack of register, or improperly made photo-engravings or electros.

Dot superimposition

Process color printing from halftone screens has an inherent defect. Some screen dots are printed directly on top of previously printed dots of other colors, which is as it should be. Other dots, however, sometimes fall either partly on or partly alongside other printed dots, which is as it should not be.

The process is fundamentally subtractive, and to work at its best requires that each superimposed color lie directly on each underlying color. Dots that do not superimpose cannot work together subtractively because the paths of light that pass through them separately do not coincide.

The process then becomes "additive," and tends to impair the true value of colors obtainable by the subtractive method. Each method has its place, but they do not work together.

Color prints

Recently developed methods improve quality and speed of production; the prints are used as art copy, color guides, and also in exhibits and presentations

James Firenze

Considerable strides have been made in recent years in improving the technique of making color prints, especially from transparencies or negatives. All have been pointing toward the twofold objective of simplifying processing and reducing the time from the camera's click to the finished print without sacrificing any quality in the ultimate result.

Varied uses

In addition to being used as a consumer product, color prints have proved invaluable to many advertising and industrial users in a number of ways, among which are included:

Art copy for plate-making, as color guide, and for client approval; advertising page layouts; catalog, house organ, and pamphlet dummies; salesmen's kits, portfolios and work manuals; advertising sales presentations; convention and other exhibits; public relations presentations; sales and industrial training courses; short-run advertising reports, surveys, and mailings; show window and counter displays; for approval of comprehensive layout to show client appearance of the finished advertisement; guide for engraver, printer, or lithographer in matching colors when original subject or copy is not available, and as a color guide for billboard painters.

Use as originals

In using color prints as originals for process color reproduction, the following should be taken into consideration:

Not all the color prints described in this article are equally suitable for use as copy for reproduction. In general, there are two types of prints: direct color prints such as the following—Printon, Pavelle (made on Printon), and Kodachrome Professional Prints; and indirectly made color prints such as Chromart, Kodak Dye Transfer, and the conventional Carbro, Chromatone, and Chromura prints.

Indirect prints are so called because separation negatives are made and then chemically toned or dyed and superimposed in register, the exact procedure differing in detail with each process.

Direct, indirect prints

A direct print, on the other hand, requires no separation negatives and as a rule is more quickly made at less cost and serves very well for purposes other than as copy for reproduction. Large quantity orders with perfect uniformity can be produced at low cost by the direct processes.

Indirect prints are not only excellent as copy for fine plate-making but, being on paper, can be retouched, airbrushed, and pasted up with other art work.

While higher in cost than direct prints, and consequently less used for routine purposes, they are excellent for submission to the client because, unlike the transparency, they are viewed by reflected light and thus are more like the finished result, and also because their appearance changes less radically with viewing conditions than does that of a transparency. Furthermore, as copy for the engraver they are economical as the engraving scale is lower for color plates made from prints than from a transparency.

Not only can the plate-maker more easily match the colors of a print than of a transparency, but some of the contrasts a client may like in a transparency are not reproducible, with resultant client dissatisfaction. Whites in some transparencies are 1,000 times brighter than blacks, but in actual printing the relation between black ink and white paper is more nearly 50-1.

Attempts by plate-makers to approximate the color brightness of the transparency may result in staging, re-etching, burnishing, and a resultant "faked" appearance in the finished product.

Carbro the oldest

The oldest of the indirect paper printing processes is the Carbro method. It employs tissue sheets, called carbon tissue by the manufacturer, that are made in the three colors of magenta, blue-green, and yellow. They are chemically printed by contact with a bromide print, require considerable handling and transferring to temporary supports, and final transfer to paper support in register with each other. Much time is required to make a Carbro print, and the cost is high. Chromura prints are based on the Carbro process but employ special separation negatives that are called Chromatic Impedance separations.

Chromatone

More simple than the Carbro process, Chromatone involves the making of three black-and-white prints on special Chromatone Paper. After development, the collodion film separates from the paper and is bleached and chemically toned to the correct color. Films are mounted in register and dried simultaneously. The chemical toning is a highly erratic process, and it is often difficult to obtain correct color transmission factors for each component. The collodion films can be mordanted with dye instead of toning, permitting greater color control of the work in all of the various processing steps by the skilled craftsman.

Chromart

Chromart is a costly but a high quality custom print on paper made especially to serve as art copy for the production of fine printing plates. It is made from Kodachrome, Ektachrome, or Ansco Color Film.

A new service, known as Chromart OA Prints, is available today. In this method a facsimile Chromart is made from a painting or other colored art work. Chromart prints are made with dyes that have the same general characteristics spectrally as the dyes used in the formation of the color film's images. Chromart is a service of the Frank Miller Laboratories in Hollywood, Calif., as is Vitacolor, intended for use in sales kits, displays, etc.

Kodak dye transfers

This is a method of making three-color prints on paper from color separation negatives and is carried out by the user, not by the manufacturer. The separation negatives may be made directly from the subject or from a transparency and are printed by contact or projection on Kodak Matrix Film.

Each exposed film is then processed to obtain a relief image in gelatin. The actual thickness of the gelatin varies in accordance with the density of the image. The relief films, known as matrices, are soaked in appropriate dyes. The amount of dye taken up by each matrix is proportional to the height of its relief image.

The dyes are then transferred from the matrices to a sheet of Kodak Dye Transfer Paper by successively placing them, gelatin side down, in contact with the paper. Registration of the images is obtained mechanically through the use of the Kodak Dye Transfer Blanket. The three dye images combined on the paper form the final color print.

The Kodak Dye Transfer Process succeeds the Eastman Wash-Off Relief Process and claims to give improved results more quickly and with a simplified technique. The initial full-color print can be produced in less than 90 minutes, excluding negative and print drying time. Successive color prints, which maintain a high standard of quality, can be turned out one every 10 minutes.

Direct color prints

These are second-generation color reproductions of original color scenes and embody both the inherent color losses of the transparency and a similar color loss in the color printing process. Nevertheless, the color fidelity is remarkably good under the circumstances. With prints made by an indirect process, this color loss is negligible.

Direct color prints are of benefit for short-run jobs where color is important but where costs prohibit four-color printing, for they can be produced in quantity for rush jobs. Pavelle Color Inc., of New York City, claims to be producing quality Printon color prints from color transparencies at the rate of more than 20,000 a day through the use of automatic, electronic controlled printing machines and a continuous method for processing prints in long rolls. In this system, all prints from a given transparency are said to be perfectly uniform in density and color reproduction.

For commercial consideration, direct color prints include Kodachrome Professional Prints and Ansco's Printon.

Kodachrome professionals

The Kodachrome Professional Print is produced by a method of coating Kodachrome emulsion on opaque white pigmented cellulose acetate, the result being viewed by reflected light. The print is made from almost any size Kodachrome transparency by Eastman. It may be enlarged to a maximum of six diameters. In making Kodachrome Professional Prints, it is occasionally possible to improve upon the color balance of the Kodachrome original; however, the quality of the print essentially depends on the quality of the Kodachrome transparency from which it is made; a good transparency yields a good, clear, sharp print.

In general, the print will be found to reproduce the colors of the original transparency in excellent fashion, particularly when the original is of soft contrast. A transparency that projects well will not necessarily yield a good print. In projection, fully exposed transparencies are most pleasing because they yield a brilliant full-scale screen image. This range (scale of tones) is often too great to be reproduced by any method of color printing.

For best results in color printing, the transparencies should often receive slightly less exposure for improved highlight detail. A transparency must show all important details clearly in both highlight and shadow areas. Overexposure causes loss of detail in highlight areas; underexposure may cause details in the shadow areas to be obscured.

Ansco Printon

Printon is an opaque print viewed by reflected light. The white base material, similar to film base, is coated with three emulsion layers and a yellow filter layer. This integral tripack closely resembles Ansco Color Film, both in structure and in principle. (See Page 34.)

It is a positive-to-positive material; that is, a positive color transparency is printed onto Printon with a single exposure. Processing, which can be done by the user with little additional equipment to that required for black-and-white print-making, is similar to that for Ansco Color Film and equally as simple, a full color print being produced from a positive transparency in about an hour.

With Printon, transparencies can be contact printed or enlarged. A sheet of Printon thus receives a single exposure through the color transparency. The result, after processing, is a positive, full-color print of the original transparency.

Because prints are viewed by reflected light, some differences in gradation characteristics are necessary. And as with all color processes that do not employ masking, there is some loss in color saturation.

Since variations in optical systems are inevitable, gelatin color compensating filters are used to adjust the color quality of the exposing light so that a balanced print with optimum color rendition can be obtained. The actual exposure of Printon is simple; however, the accuracy required is greater than that in ordinary black-and-white enlarging.

A reversal process

The processing of Ansco Color Printon, since it involves reversal, contains several more steps than simple development and fixation, but it is not difficult and can be executed by any careful darkroom worker. No separation negatives are required.

Some variation in the gradation of Printon is possible by altering the developing times, although the practical range, of course, is nowhere near as great as that afforded by varying contrast grades of black-and-white enlarging papers.

The finished prints have cream-colored whites and neutral blacks. While the color rendition is not a facsimile reproduction of the original transparency, it is surprisingly close for a direct print. Any number of duplicates can be made from a given transparency, the operation of printing requiring only a single exposure for each one.

Ansco Color Paper

This is a multilayer material similar in construction and principle to Ansco Color Film, consisting of three differently sensitized emulsions coated on a white paper base, instead of white acetate, as is Ansco Printon. It is negative-to-positive, and unlike Printon, which is processed by reversal, Ansco Color Paper is immersed directly in a color developer without re-exposure or redevelopment. As a result, processing time can be reduced to 30 to 35 minutes, the work being done entirely by the user.

It may be printed either from three

color-separation negatives such as are employed in making a Carbro print, or from complementary-colored negatives, but not directly from a positive transparency. A positive print is produced from the negative, and development is carried out with a special Ansco color developer.

This converts the exposed silver salt of the different emulsion layers into three silver images, and simultaneously produces three dye images in the primary colors, yellow, magenta, and cyan. After development, the silver images are bleached to convert the silver into a silver salt capable of being removed in a fixing bath, the final result taking the form of a tricolor dye print.

Separation negatives used

Ansco Color Paper is intended for use with black-and-white separation negatives, which can be either continuous tone, line, or halftone; or, line negatives can be used that have had the transparent lines stained with dyes of proper color. With separation negatives, the tricolor filters used for exposure of these negatives also are used for printing the negatives on Ansco Color Paper.

The exposures are made consecutively and in register on the Ansco Color Paper, the entire procedure being a photographic adaptation of printing the primary colors in succession such as is done by the proofer and press man. But since the photographer is "printing with light" instead of inks, the light for each of the negatives must be of proper color.

This is achieved by transmitting the illumination from a tungsten filament lamp through the respective tricolor filters—the combined action of the three primary colors of light creates a variety of hues capable of faithfully translating the colors of nearly any subject.

A print made properly from a good set of separation negatives shows a remarkable "naturalness" of color, and has excellent photographic quality. In addition, the blacks are deep and rich and the whites clear and only slightly tinted to a scarcely noticeable degree.

Pre-proofing plates

Ansco Color Paper also can be used to "pre-proof" plates from separation negatives. It may be used for the production of "proofs" from line and halftone color negatives and "proofs" from negatives made from Ben Day and shading sheet drawings in three- and four-color effects.

Although the hues of the "proof" on Ansco Color Paper may not be identical with those made with tricolor inks—because of the greater purity and luminosity of the dyes in the color print—the discrepancy will not be so great as to hide serious errors of color rendition, thus permitting such variations to be corrected before making the final printing plates.

The "proving" of line and halftone negatives on Ansco Color Paper can be considered as "pre-proving," and is of particular aid when a rough set of proofs is wanted quickly for dummy or layout purposes, or for preliminary study of the color effects by the customer or advertiser. The making of color halftone proofs in place of the present Van Dyke or press plate proofs also is of much use to lithographers as well as gravure plate-makers.

Gasparcolor

This new print, which is not yet available commercially, is based upon the principle of dye bleaching, rather than color development. Color development is a matter of dye manufacturing during the formation of the image, while dye bleaching involves the differential elimination of dye colors that were present to begin with. Gasparcolor is a multilayer print material coated on a white acetate base, and is positive-to-positive.

Gasparcolor involves neither color development nor reversal (re-exposure and redevelopment); instead, it is based on dye destruction. Gasparcolor paper is manufactured with the three complementary color dyes (yellow, magenta, and cyan) in the paper, and in the course of exposure and processing, the dyes are bleached out where they are not needed in the picture.

Developing

After the Gasparcolor material has been exposed to a positive color transparency, by contact or projection, it is subjected to regular black-and-white development, followed by fixing to remove any superfluous silver halide in the three layers of the integral tripack. This leaves a partial silver image plus a full complement of dye in each of the three layers.

Gasparcolor material next receives a dye-bleach bath during which the dye is destroyed in each of the three layers wherever silver exists, the degree of dye destruction being directly proportional to the density of negative silver in the particular area.

The material then is immersed in a silver bleach bath that reduces the silver negative image to a colorless silver complex, which in turn is removed in a second fixing bath. The entire operation takes 45 minutes, and only the development requires total darkness.

A dye bleach process

Gasparcolor is the single known and tested example of the dye-bleach process. Among the factors in production of Gasparcolor prints are these:

1. High speed negative emulsions can be used in manufacturing the integral tripack, since reproduction of the positive image does not involve reversal.

2. There is a wide choice of brilliant complementary colors that can be put into the tripack layers at the time of manufacturing.

3. It has processing flexibility. Both high and low gamma can be achieved by varying the development over a fairly wide range without changing the color characteristics. However, the fact that the exposing light must pass through heavily-dyed tripack layers tends to slow Gasparcolor somewhat.

4. The dyes have the highest degree of permanence and extraordinarily high fastness to light.

5. The material can also be used for direct reproduction in the camera, which is excellent for reproducing paintings, drawings and still life subjects.

Colorless intermediates

Recent experiments using an absolutely colorless intermediate of the particular dye in each of the layers, instead of the completed dye, have shown a considerable increase in speed. This material is intended for use as a high-speed color-taking material in the camera; however, it is not yet available commercially.

In this method, the Gasparcolor material, after exposure and development, is immersed briefly in a solution that completes the formation of fully-colored dyestuff deposits from the intermediates. Processing then is completed in the normal manner for the dye-bleach system.

Announced as the YEARBOOK was going to press was a new professional color film (negative) which claims to be excellent for the making of color prints. Manufactured by Eastman, this film is called Ektacolor. It should be on the market in the early months of 1948.

Design and color section

Production Yearbook presents a collection of thirty-six colorful pages illustrating a new approach in planning, execution, and graphic arts technique

Designed by Bradbury Thompson, 1944-1947

Color need not be a luxury any more. There's a place for color in many an advertiser's or publisher's budget where none has ever been before.

If you think there's a rainbow in the sky, it needn't be printed in one color.

You might reach these conclusions after you've had an opportunity to glance at the following pages with their interesting and attractive demonstrations of color and layout.

If you'll be seeing more color these next few years than ever previously, it will be not only because of the vastly changed picture in the graphic arts—better equipment, facilities, reproduction techniques and materials—but also because of improved production knowledge and art direction.

Probably no more appropriate proof of this could be found than in the double spreads appearing on pages 16-33 and pages 44-57. They represent a galaxy of some of the finest color and process advertising and book art, the results being tribute in themselves to the creative genius of the artists, advertising agencies and publishers involved and the craftsmanship of the producers.

Equally important to the know-how of color planning is the general arrangement of all such spreads, which is the province of the art director. All of these new layouts were designed by Bradbury Thompson, under whose art direction PRODUCTION YEARBOOK has been prepared. They represent his work over several years as it has appeared in "Westvaco Inspirations for Printers," published by the West Virginia Pulp and Paper Co., through whose express permission we are enabled to reproduce them for the benefit of PRODUCTION YEARBOOK readers. In many cases, they have been modified for the specific purposes of this exposition.

Admittedly, the finest reproduction requires the best of plates and printing production, but there's a magician's bagful of new ideas for the advertiser, art director, or book designer who wants to make effective use of color on the limited budget that has been accorded him.

For example, line color is economical because there's usually no color separation and often little or no register in printing. Line color can be used by itself or in conjunction with a small halftone illustration to give the entire area of the ad or book page the appearance and appeal of being in full color. A single halftone or line plate can be repeated in different colors very effectively. These techniques and unique effects have been illustrated on pages 22-23, 32-33, and 46-47.

Wide scope offered

To go on to specific examples as shown by Mr. Thompson, the "Bombardier," 1945, pages 22-23, was one of the first—from an historical standpoint—to employ such color effects to suggest action. Starting point was a black-and-white drawing. Only one line cut and one electro were made for use on a two-color press—the electro for the second color.

The strip of ground was left in the blue plate but routed out on the electro and on the original when printing the other colors. Cuts were thrown off register, with the intention in mind to give the whole piece direction and action. Drawings of cave men (from an authentic source) were photostated, made into line cut, and thus help to carry out the feeling of motion. This would appear to be a four-color job as a whole; but only one of the pages was printed in four colors; the other—on another form—was printed in only two colors.

"A Little Too Late," 1945, pages 46-47, also started out with black-and-white art work, and of course an original halftone. Objective was to produce the effect of action with color inks and get a bright and unusual effect economically. Figure of the man in the original halftone was photostated and blacked in—it was easy for the artist! Seven progressively larger line cuts were made. Each was then printed in transparent inks. No close registry was involved for the printer, no color separations, no matching of colors. Projection of tracks in color helps to give the same effect as a large process color illustration would, adding drama, action, and color to the whole layout.

In this connection, Mr. Thompson has an interesting thought that is best expressed in his own words:

"The designer who has knowledge of the actual production of printing may use printing ink and the printing press in a similar direct way that the painter uses oil and canvas. He may utilize the inherent qualities in ink and the ordinary facilities of presswork to achieve the maximum possible effect with maximum economy. His art and his message do not always require the skill of process engravers to translate them with costly printing plates."

"Horsepower of a Different Color," 1945, pages 18-19, uses a process plate as a spot illustration. Although it's a comparatively small spot, its use in conjunction with large-size line color plates spreads the scope of picture and gives the effect of color across a large area. Only one page was printed in four colors. The other, on a different form, used only two. Symbolism of combined mechanical cylinder and horse is carried out in line plate, based on a toy mechanical horse—dappled with machine cogs. (The idea came to Mr. Thompson from his young son who was playing with his mechanical horse-on-wheels.)

"Hey Diddle Diddle," 1945, pages 56-57, employs line cuts again to supplement the main illustration, extend its thought and add to color area. Different line drawings were made for each successive movement of the cow-jumping-over-the-moon, much in the manner of successive frames of a motion picture sequence. Cuts made from these drawings were overlapped to secure both new color and effect of continuous action.

Here's another example of how an imaginative art director can enlarge upon a given single element and carry out its theme through the use of incidental illustrations and general layout.

"Art, Architecture and Printing Are One," 1946, pages 20-21, is a symbolic presentation in which rose windows become very much akin to press cylinders.

Dashed lines connecting four rose windows could be web of paper traveling around press cylinders.

The black rose window in the sky of the main picture was not in the original art work or process plate. After study of the plates, it was realized that there was little need for the black plate in reproducing the sky. It was a simple trick to use the line cut of the window instead of the sky portion of the black process plate. Rose window illustrations were, of course, originally steel engravings.

In "Printing Is Music," 1946, pages 40-41, line color has again been used to supplement the main color illustration and to triple the area of the illustration with comparatively little added cost.

The theme is carried out by the notes that spell the word "printing," and by the design element in lower left corner which could be again a web of paper traveling around an impression cylinder or, conceivably, a roll of perforated music paper on a pianola. The "cylinder" itself could be a record. The main illustration for this layout was originally used in a Farnsworth Television and Radio Corporation advertisement.

"For Want of A Nail," 1944, pages 42-43, frames copy in a simple black cut that ties in with thought of main illustration, adds interest to copy and supplements effectiveness of main illustrations. Black bar was simply cut out of metal. In area of the main plate where the bar appears, there was no black color.

Overprinting colors

In this layout, as in many others, one color is allowed to print over another (yellow bars over the black horseshoe). Although the bars could have been cut to register with the outlines of the horseshoe rather than to overprint, this would have meant more expense, made printing more difficult by creating a register problem, and would have added nothing —possibly detracted—from the over-all effect. Moreover, the general feeling of the picture has been spread over the whole area.

"Precision," 1945, pages 52-53, makes use of the simplest kind of line plates. The color circles were hand-cut from metal and no art nor photographic steps were employed in their manufacture. They provide appeal to the illustration, impel the reader to stop, look, and read. They were designed to parallel the cogs in the illustration to the left.

"With Color a Line Cut is a Prancing Persian," 1946, pages 32-33, is an excellent example of the effectiveness of the simple technique. The plates that were used cost approximately $25.00 and yet this layout in competition with others having production costs up in the thousands of dollars was awarded the Art Directors Club Medal. A photocopy of a portion of a four-color painting was made, blacked in, and then silhouetted. Two line cuts (one original and one duplicate) were all that were needed by the printer using two-color presses.

"Printing Has Eyes Beneath the Sea," 1946, pages 30-31, is another illustration of ingenuity on the part of the art director who knows his plates. It was felt that part of the red process plate could be spared without sacrificing the general effect—that part devoted to water. And so this part of the plate was cropped and line cuts of fishes were put in its place. These cuts were made from old steel engravings found in a rare volume.

Effect of motion

In "Figures in Motion," of 1945, pages 50-51, the black plate and the red plate of a four-color set were printed on the page facing the four-color set. This added to illustration area but at no added plate or art cost. Actually, because the red plate was stronger than the black plate, it was used on the two color side for printing both the red and black inks. To heighten effect of motion, two-color plates were printed off-register, and words of the heading itself were scattered all over the page. A conventional way to fill the same area with figures in motion would have been either to spread out the elements of original art work or utilize more figures. First alternative would have been less effective, the latter more costly.

"The idea," says Mr. Thompson, "was to make two pages of the magazine have the feeling of people walking all over it, back and forth—and printing off-register gives the essential feeling of motion."

In "Dance of Color," 1945, pages 26-27, the only added expense is that of a set of electrotypes and some hand-cut line plates. Activity and splash of color of main illustration is carried out additionally by its repetition off-registry. Line plates derive their shapes from the whirling dancing figures. Printed over the off-register set of plates, they add another note of action that fairly makes the page itself dance with color.

The double spread of "Black Can Give You a Lift but Color Can Make Your Head Spin," 1947 on pages 16-17, throws several line cuts together. No color separation, not process plates, not precise registry in printing were needed. Color circles were cut out of metal. Since the right-hand color page and the left-hand black-and-white page were printed in separate forms, only the one cut of the black-and-white illustration was needed. Emphasis is heightened by using the same cut in both black-and-white color illustrations.

"Your Engraver Can Be a Sculptor," 1947, pages 54-55, shows what can be done with an ordinary photograph. The red plate has been cut out in such a shape as to emphasize the figure and to harmonize with the shape of the sculptured background element. On the opposite side, that portion of the red plate cut out from the full-color plate is printed with a part of the black plate.

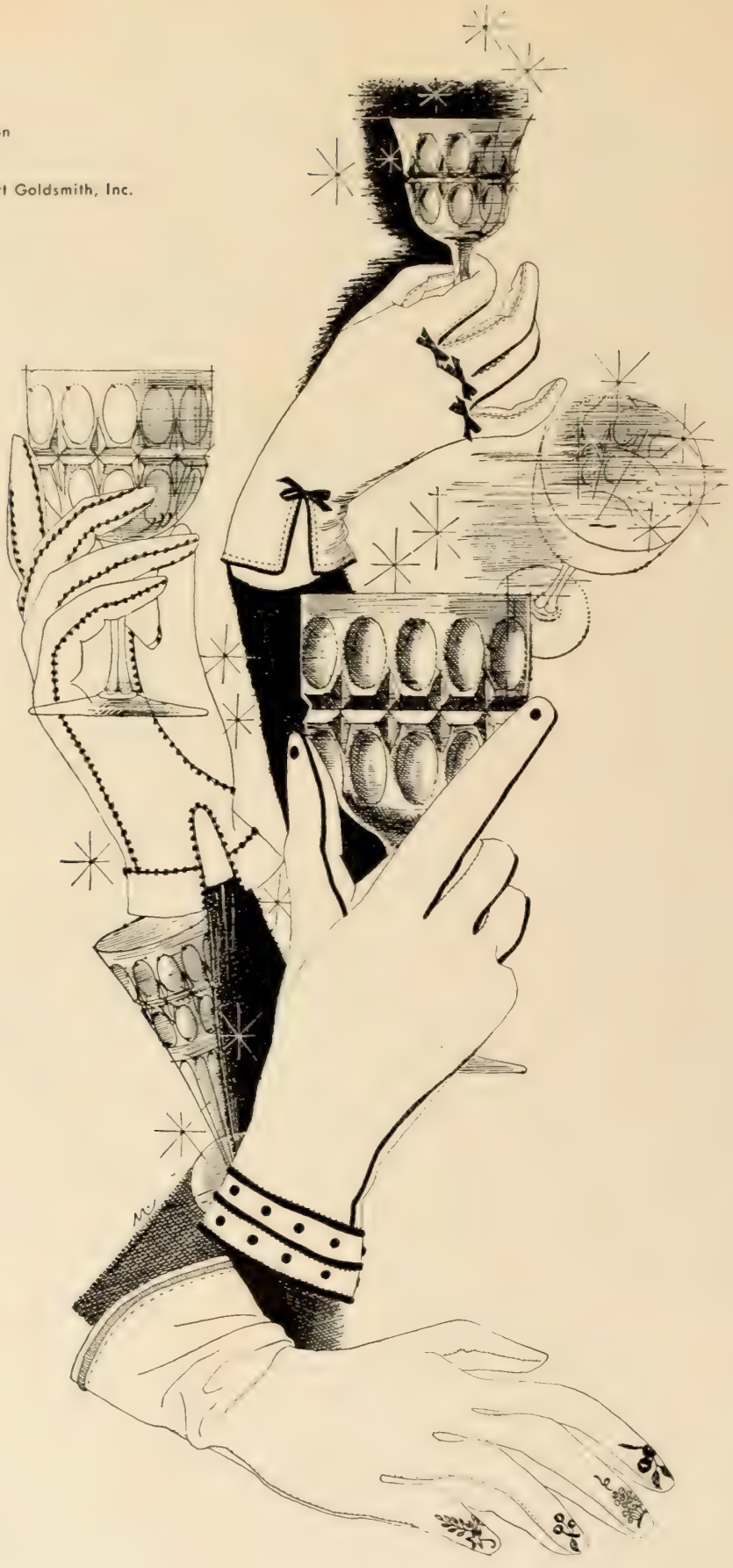
"A Child Can Be as Prolific as Pablo Picasso," 1947, pages 28-29, couples a painting by Auguste Renoir and a child's drawing. The latter is suggestive of some of the works of the great Picasso, who has long been an admirer of children's work. Children, he feels, are more creative, less imitative in certain things than are adults. They are sensitive to things of which their elders are unaware. They have something completely fresh to offer and often produce new forms, new shades, new shapes, new combinations of old elements.

"Printing Can Be a Ballet in Action," 1947, pages 44-45, reproduces the Kodachrome that won the Art Director's Club Medal for the photograph of the year. The engraving made from it was likewise selected as outstanding by a committee of qualified and impartial experts.

On the left-hand page, to point up the motion and to supplement the idea of the dance silhouette, halftones of key figures in the ballet have been printed over each other. The effect is one of added excitement and motion. The silhouette halftones were taken by photostat from the Kodachrome, enlarged, and reproduced.

These color spreads are further proof —as if any were required—of the artistry of Mr. Thompson, who is Art Director of "Mademoiselle" and whose most recent achievement was the design of a sister publication "Living." "Westvaco Inspirations for Printers," many issues of which Mr. Thompson has supervised for design and typography, is well known throughout the graphic arts world. Its achievements as a prize winner as well as those of Mr. Thompson are detailed in the "Authors and Acknowledgments" section of this book.—L.H.J.

Artists: Eric Mulvaney, Ben Benson
Advertiser: Seidenbach's, Tulsa
Agency: Alfred J. Silberstein, Bert Goldsmith, Inc.
Engraving: Line



Black can give you a lift

Can give you a lift right into the minds and the hearts of every man, woman or child who sees your effective use of illustrations reproduced in line or halftone, with good black printing inks on good white printing papers.



Can make your head spin with a pile of orders when you are marketing anything with color in printing. Of course, you've really got to have some color in your thinking to sell. And the headspin is better than a tailspin any day.

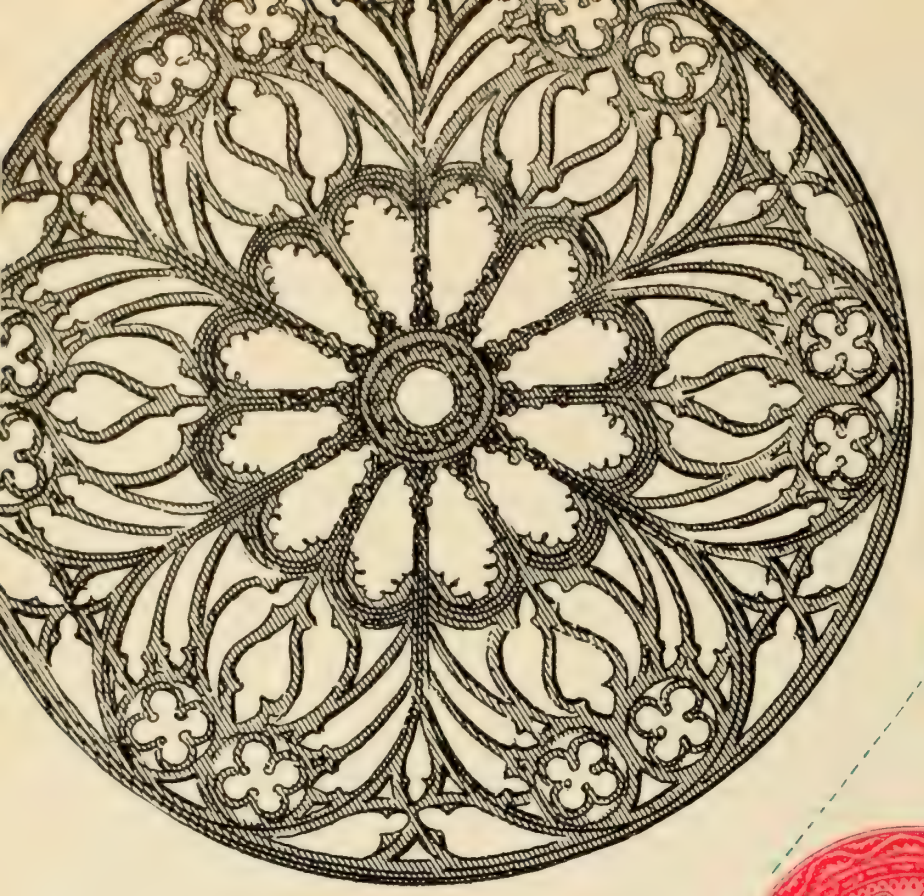
It's comparatively easy to produce an arresting advertisement with an unlimited budget but to produce a display of maximum effectiveness when dollars, and even pennies, count heavily, well, that's horsepower of a different color.
Ever thought of using four color process plates in a relatively small size as a spot illustration and building two line color elements around it to secure an overall color effect?



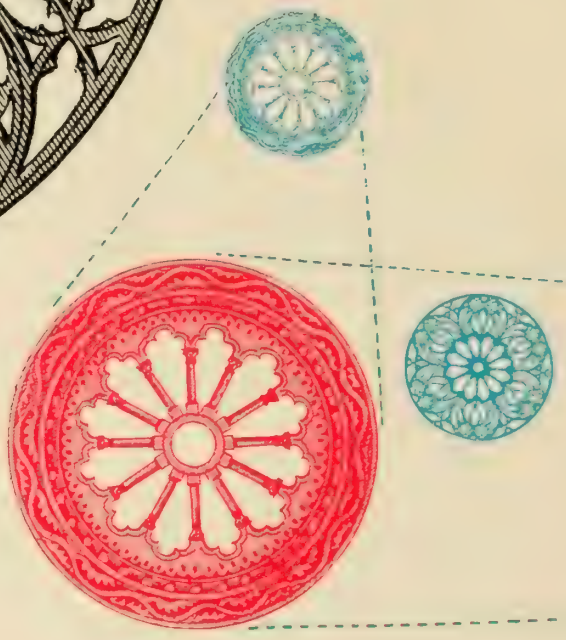


Horsepower
of a different color

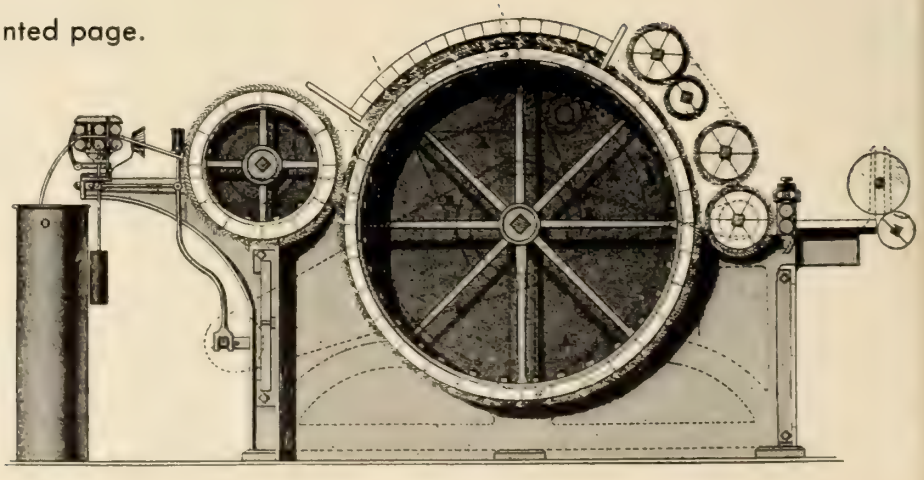
Painters: Fred and Doris Wright
Advertiser: American Bosch Corporation
Agency: Wm. B. Remington, Inc.
Art director: S. H. Nelson
Engraving: 4 color process, 120 line screen



Art, architecture and printing are one



Art, architecture, and printing are one because all are magnificent necessities. There's a symbolic one-ness in the circular perfection of stone carved into lace, rose mosaics cut from glass, or fine lines engraved on steel. Their beauty is revealed to us, hundreds of years and thousands of miles away, through the printed page.





Painter: Bernard Lamotte

Advertiser: De Beers Consolidated Mines, Limited and Associated Companies

Agency: N.W. Ayer and Son, Inc.

Engraving: 4 color process, 120 line screen



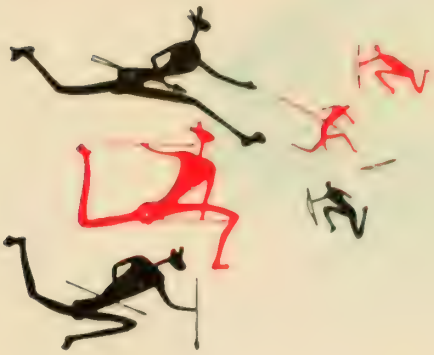
Painter: Robert Riggs

Advertiser: Felt and Tarrant Manufacturing Co.

Agency: N.W. Ayer and Son, Inc.

Engraving: Silhouette Halftone, 100 line screen

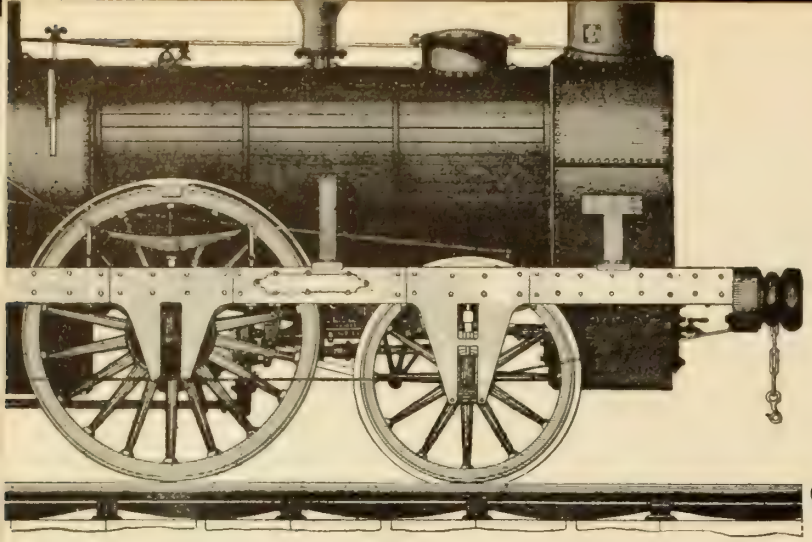
Below: Line reproduction of a prehistoric drawing made on stone





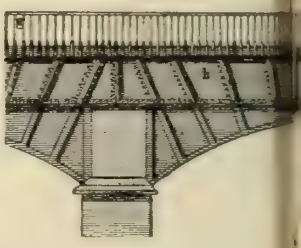
Old Cro-magnon had a stone. He also had an excellent idea. Stone fall quick. Make stone fall quicker. Sock enemy twice as hard. Cro-magnon started something, anthropologically speaking. He also started something graphic-arts-wise. It was this illustration, first of a long line, that used super-imposed, casually registered color to suggest motion and action. One plate, four colors, no color separation, no register problems. But what a sock and what a wallop Mr. Cro-magnon is giving us! Ideas and sales, he is saying, can be socked home with color and action even on the most limited budgets.

Bombardier

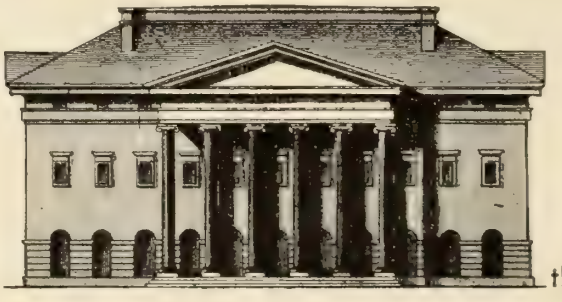


Good

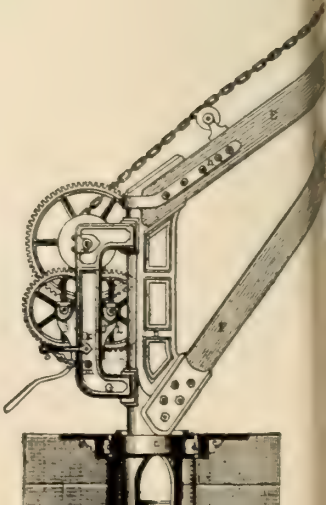
Good printing is not merchandise. It is just paper and ink travelling to minds at the speed of light. It is the winged sandals of Mercury at your service. Wherever there's a person who's capable of understanding, there your printing finds a haven. Deep into the mind it penetrates and, if it is good, carries the message that proclaims "This is for you!" And then comes your reward.



travels

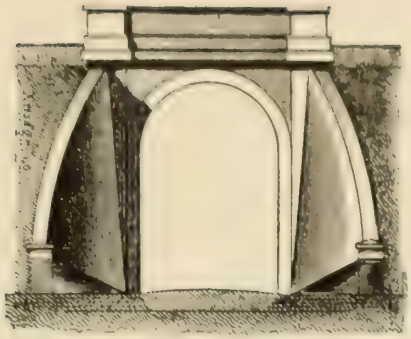


printing



Drawings: Winkles, Keller, Krause, Feldweg

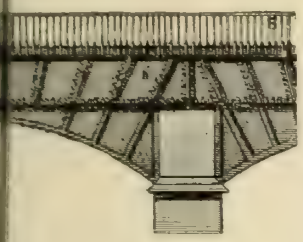
Publication: Iconographic Encyclopaedia



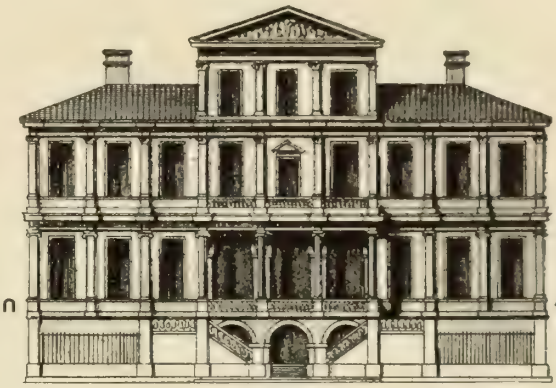
comes the call "We want!" Then you realize good printing for you is idea-extension unlimited, express, unhampered, non-stop, double track! Out from you as effort and back to you as effect!

far

whatever you may have to offer,

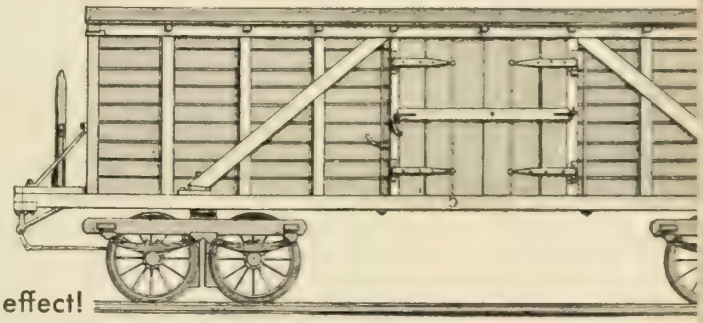


To wherever you are, for



and





wide





Painter: Robert Riggs
Advertiser: Farnsworth Television and Radio Corporation
Collection: Capehart
Agency: N.W. Ayer and Son, Inc.
Engraving: 4 color process, 120 line screen

Color is a dance of light. And light, we're told, is about the fastest thing there is. It travels at the rate of 160,000 miles per second, the speed at which this whirling mass of color travels to your eyes. See the primary color plates together presenting a dance that radiates every color in the spectrum. All this to your eyes in less time than it takes to set one letter of this message in type!

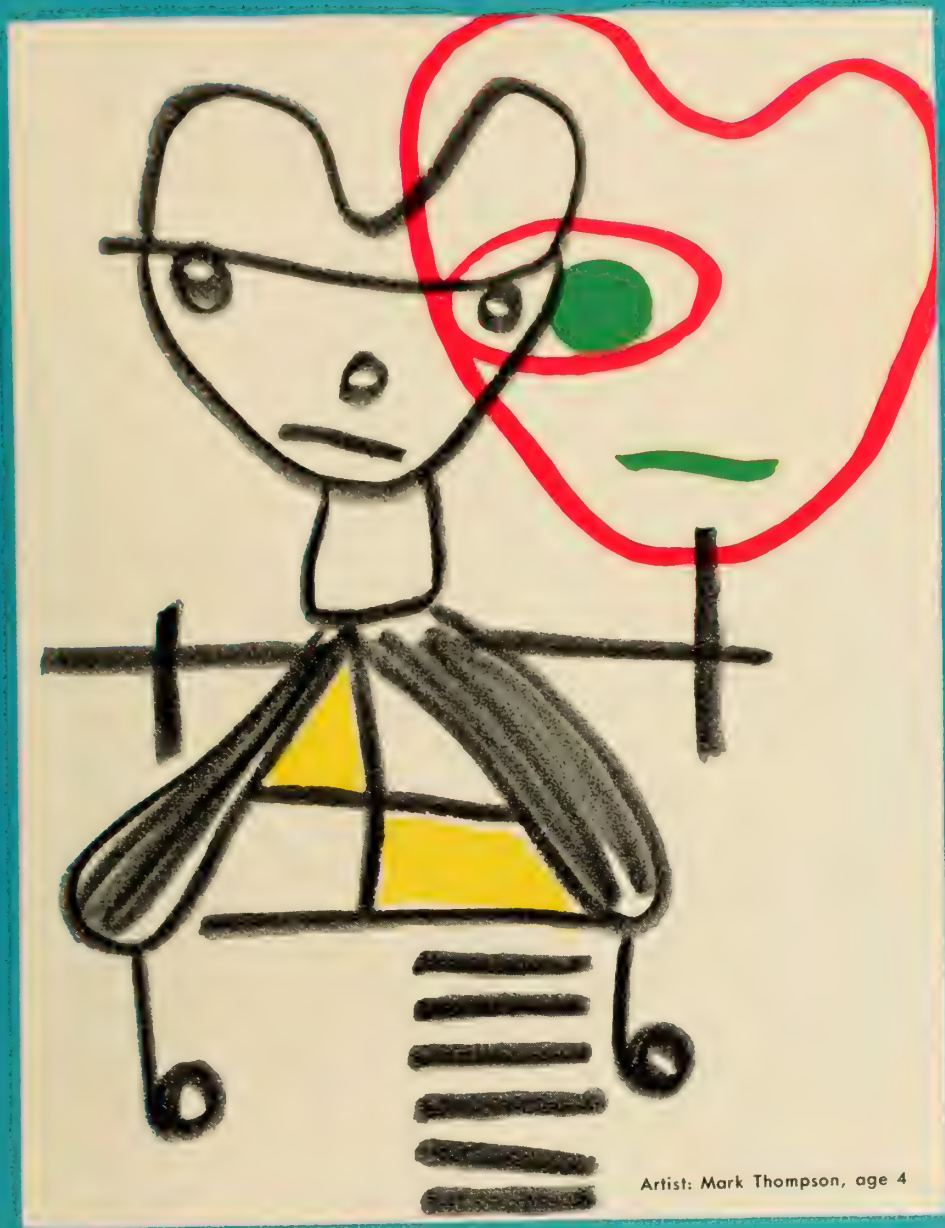


Dance of color

Yes, with printing, a drawing by a child of four can be reproduced as many times and viewed by as large an audience as a masterpiece of the most famous impressionist painter or the most widely discussed abstract artist. And the child's drawing can be preserved alongside the masterpiece for generations.
Here before you, on paper is printed proof.

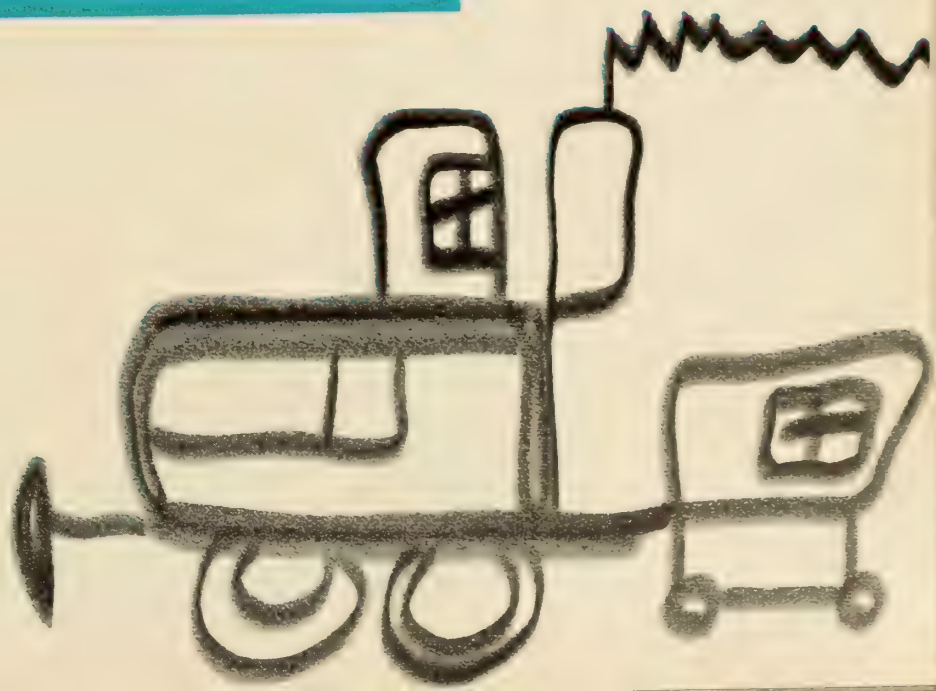
A child can be as prolific as Pablo Picasso

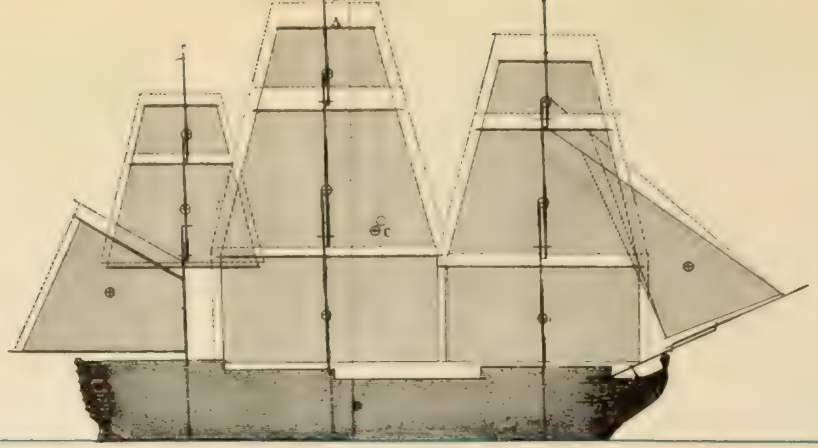


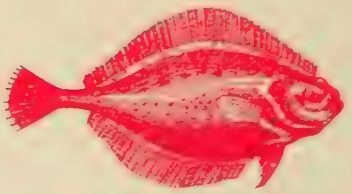


Artist: Mark Thompson, age 4

Painter: Auguste Renoir
Galleries: Durand-Ruel
Magazine: Art News Annual
Engraving: 4 color process, 120 line screen

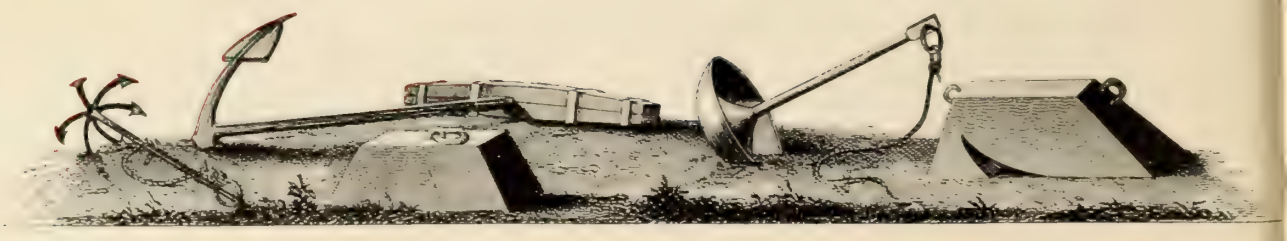




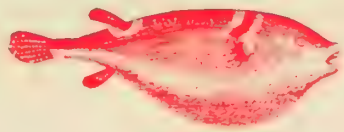


Printing is vision with eyes beneath the sea, above the earth, and everywhere upon the earth. Printing is ingenuity, the miracle that brought forth these fish from the depths of the sea to swim in deep green waters before your very eyes. Printing is the ingenuity that thought of cropping the bottom of the red process plate and replacing it with line cuts, so that these fish, reproductions of old engravings, could swim beneath the chalk cliffs of Dover. As vast as the sea and as boundless are the possibilities of contemporary creative printing.

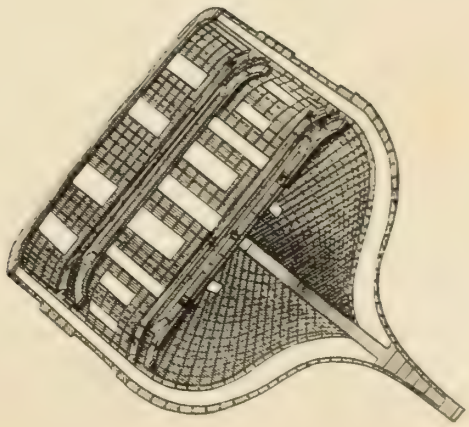








Printing
has eyes beneath
the seas



Painter: Bernard Lamotte
Advertiser: Farnsworth Television and Radio Corporation
Collection: Capehart
Agency: N.W. Ayer and Son, Inc.
Engraving: 4 color process, 120 line screen



Artist: Persia Abbas

Advertiser: Container Corporation of America

Agency: N.W. Ayer and Son, Inc.

Engraving: 4 color process, 120 line screen



With color...
a line cut
is a prancing Persian



Is it gold that you want for this steed's harness? Alas, you won't get it, for the advertising appropriation is of brass, brass tacks. Steed and rider are primed to climb to hazardous heights, but the budget is down to earth. Shall we scrap horse and rider for want of process plates? Gaze and see what art director and production man have wrought, how for the mere cost of a photostat of a painting and one line cut, color may prance and dash with vigor upon a printed page. A little ingenuity stretches the budget a long way.

Color film

Ansco Color and Ektachrome are both high quality films that can be turned into full-color positive transparencies by the user in 90 minutes

Edward C. Johnson

The latest major development in color film is the commercial production of screenless film that can be processed by the user. Up to several years ago, color films or plates contained screens. The advent of Kodachrome, a screenless film, revolutionized the color photography world. However, one commercial drawback to the use of Kodachrome, despite its many advantages, was the necessity of taking several days to get the film processed by the Eastman Kodak Co.

Two high-quality professional color films that can be processed by the user, eliminating the necessity for sending the film back to the manufacturer for that work, are now available.

The two, Ansco Color Film and Eastman Ektachrome, are very similar in a number of respects, both as to their advantages and as to their method of processing, which requires no special equipment or materials other than the specially prepared chemicals that are provided in packaged kits. The complete procedure requires about 90 minutes, with only the first 15 to 19 minutes in darkness. (See also Ektacolor in the Cross-Reference Index.)

Time saved

The greatest advantage of color film that can be processed in the photographer's own darkroom, without waiting for factory developing, is the saving of time. This is achieved in three ways:

1. Copy: A color transparency of an animate object can be used where it would not be practical to make direct halftone color separation negatives or where the conventional three-shot camera is otherwise impractical. The color transparency is also invaluable in making duplicate copies of art work required when duplicate advertisements are made in different reproduction plants or by different processes.

2. Color Guide: The transparency can serve as a guide to the engraver, printer, or lithographer when the subject, such as a valuable painting, must be returned immediately after being photographed.

3. Release Sets: Since the completed color transparency can be viewed an hour and a half after being exposed, the models can be released and the sets dismantled without further delay. Or, if needed, additional exposures can be made before the sets have been dismantled or before the models have changed and have departed from the studio.

Ansco color film

Ansco Color Film is a high-quality color film for making full-color positive transparencies that can be processed in the user's own darkroom.

In principle, Ansco Color Film is similar to a combination of three separate films, one behind the other, and each sensitive to one of the three primary colors in the spectrum. When exposed in a camera, each of the three emulsions records only the light of that color to which it is sensitive; through the combined sensitivities of all three films, the entire range of hues in the spectrum is registered.

Specifically, the top layer of Ansco Color Film is sensitive only to blue light because it is a noncolor sensitized emulsion. Directly beneath this is a yellow filter layer composed of minute particles of silver suspended in gelatin. These particles are removed along with the silver in the antihalation layer when the film is processed. This yellow filter absorbs any blue light that passes the top emulsion. In addition, it freely transmits both green and red light.

The second emulsion layer (an orthochromatic emulsion) is sensitive to both blue and green light. However, the yellow filter prevents any blue light from penetrating this far into the film, and so the second emulsion records only the green light reflected from the subject.

The third emulsion layer is sensitive only to blue light and red light. Since blue light was absorbed by the yellow filter, the bottom emulsion gives a record of red light only.

Ansco Color Film is, of course, a reversible film in which both the negative and positive images are formed in the same emulsions. The object of the processing is to yield a color picture composed of three separate dye images, each the complementary color of its exposing light.

Thus, after processing, the top layer of the film contains a yellow dye image; the center emulsion, which records green, contains a minus green or magenta image; and the bottom layer contains a cyan image that is complementary to the recorded red light.

Using film effectively

Ansco Color Film is supplied in two types, daylight and tungsten, and each must be used with the illumination for which it was designed. Generally, the best results in outdoor color photography are obtained in bright sunlight. Mean noon sunlight is approximately 5,400 K; accordingly, Ansco Color Film, Daylight Type, is balanced to light of approximately 5,000 K to 6,000 K.

The lighting contrast of subjects is an important consideration in outdoor color pictures because this, in turn, largely controls the contrast of the finished transparency. Front lighting is usually best because it avoids harsh contrasts between very brilliant highlights and dark shadows. However, side-lighting or even back-lighting can be used successfully in photographing people if some means of supplementary shadow illumination are provided.

On a bright sunny day an exposure of 1/50th second at f6.3 is usually correct for front-lighted subjects, and this value can be used as a basis for setting lens openings and shutter speeds for specific conditions.

Ansco Color Film can be processed by the photographer himself with little more than ordinary darkroom facilities. All the chemicals needed are included in developing outfits available in one-quart, half-gallon, one-gallon and three-and-a-half-gallon sizes. The procedure is not difficult, even for nonprofessionals.

The chief difference between handling

color and black-and-white film negatives is that careful attention must be given to such details as agitation, times, and temperatures, which are more critical for color work than for black-and-white photography.

Equipment required for processing Ansco Color Film is essentially the same as that needed for black-and-white development. The chief difference is the fact that several more tanks, trays, or other containers are necessary. Where many films are to be processed, tank development is preferable to tray development, and the directions concerning agitation and times of treatment in the instruction sheet are based on tank processing.

Ansco Color Film is available in sheet form for commercial, press, and portrait use, in roll form for amateur cameras, and in 35 mm. size for miniature cameras. It also has been prepared for motion picture work and in large rolls for use in the various aerial cameras.

Eastman Ektachrome

The manufacturer, in appraising Ektachrome, states that while it does not replace Kodachrome Professional Film, it is being used by many photographers in place of Kodachrome for many different types of work where quick processing is important.

Ektachrome is considerably less expensive than Kodachrome Professional Film; without processing, Ektachrome costs about half as much as the Kodachrome does, including processing. Even including the cost of the processing, Ektachrome still is less expensive.

Ektachrome now is available to commercial users in the same 12 sizes as is Kodachrome Professional Film, and in types for both artificial and daylight illumination; the processing kits, containing five chemicals, are also available.

The reproduction of Ektachrome is not unlike that of Kodachrome or other transparencies, with one exception. This is that it is imperative that masking be used in making the separation negatives if the increased photographic qualities that have been built into Ektachrome are to be retained in the reproductions. The Eastman Kodak Company has developed a masking technique especially for this purpose.

The features of Ektachrome include soft gradation and brilliance, as well as fidelity to the subject's basic hues, regardless of reasonable variations in lighting intensities. There is no significant change in hue in shadow areas beyond a deepening of color. It has somewhat lower contrast and greater exposure latitude than Kodachrome Professional Film, and thus will handle a greater range of lighting contrast.

The importance of this is that it permits an improvement in the rendering of highlight and shadow detail, while also allowing a range of lighting approximating that of black-and-white.

Although many photographers appear to prefer the tone and color rendering of Ektachrome, the Eastman company regards any preference as still a matter of the personal opinion of the user.

Ektachrome processing

The processing of Ektachrome consists of the following steps:

A 15-minute initial development; a one-minute rinse; hardening of five minutes—and after the third minute the room lights may be turned on; five-second reversal exposure for each side of the film, using a small flood-type lamp to flash all remaining silver bromide in the emulsion; five-minute wash; 25-minute color development; five-minute clearing and fixing bath; one-minute rinse; 10-minute bleach; short rinse; five-minute clearing and fixing bath; 10-minute wash; one-minute use of Kodak Photo-Flo to reduce possibility of water spots during drying, and finally, drying as for conventional films.

The initial 15-minute development brings out the contrast in the layers of the film and is comparable to a black-and-white development. The color formers are included in the emulsion layers and are brought out in the 25-minute color development. Color images resulting from this latter development are positive.

Since Ektachrome transparencies in many instances will have greater appeal to a client than would a Kodachrome, the production department, photo-engraver, or lithographer will often be expected by the client to therefore obtain a superior reproduction. To make this possible, the Eastman Kodak Company has made available to the trade data, equipment, and recommended procedures for the processing of Ektachrome.

In brief, the use of special masks in the making of the separation negatives is recommended. A mask consists of a negative or positive, usually of low contrast, that is bound together with a positive or negative, usually of normal or high contrast, in exact register. If close register is not obtained, an outline effect may appear in the finished job, necessitating hand retouching.

To facilitate register, a method of producing an unsharp mask has been devised. An unsharp mask is one in which the edges of the image have been enlarged slightly and has a vignetted effect obtained by an undercutting action of the light when making the mask.

Without masking, delicate gradations of highlight and shadow detail and slight color differences would be lost in the reproduction.

Two types of masks are employed. One is the mask that reduces the brightness range of the transparency to bring it within the practical limits of the printing process and that also effects a degree of color correction. An additional highlight mask may be used with transparencies in which highlight detail and gradations are particularly important.

When the highlight mask is necessary, it is used in the production of the principal masks, which in turn are employed in the making of the separation negatives. The negatives are made by contact following the usual procedure, except that the appropriate principal mask is in place when the exposures are made.

Some buyers of color plates will want to see "proofs" of the negatives before the plates are put on metal. The Kodak Dye Transfer Color Printing Process (See Cross-Reference Index) is used.

Kodachrome

Processed by the manufacturer, Kodachrome is a single film coated with three emulsions, each sensitive to one of the primary colors of light. In processing, each of the three emulsions is selectively dyed and its silver removed, leaving a color dyed image. It is developed and reversed to a positive transparency through a highly complicated process by the Eastman company.

Processing plants have been set up throughout the world, and films require two to eight days for processing. It is available in 35 mm., Bantam, and roll film, and standard cut film sizes from 2¼x3¼ inches and 11x14 inches, and 8 and 16 mm. movie cameras.

The transparency obtained on Kodachrome is "subtractive" in color, which results in much brighter, cleaner colors than can be obtained in an additive process. The film has no screen of any kind and can be enlarged indefinitely. It is made in two kinds, one for artificial light, the other for daylight.

Color matching

Printer's ability to obtain perfect match depends upon nature of copy, process and plates used, thickness of ink film, drying speed, paper, and press

George Welp

One of the continuing headaches for both printer and printing ink maker is color matching. From the standpoint of ink manufacturers, most of the complaints about poor color matching are the result of insufficient information about the job.

Avoid rush jobs

Occasionally the printer is handicapped because he is required to rush a job and has no time to give the ink maker the complete specifications that are necessary for an efficient job of color matching and formulation.

If buyers would give their printers enough time to plan the job in detail, the latter could furnish the ink maker with complete requirements and save much time and disappointment.

Seven basic factors

In any printing job there are seven factors that affect the final result: type of press, process of printing, kind of paper or other printing surface, ink film thickness (the amount of ink carried on the printing plate), speed of drying demanded, kind of printing plates, and character of the original copy.

Unless all these factors have been properly planned and the proper information about them furnished to the ink manufacturer, he can not do the best job of color matching and the printing will suffer accordingly.

In spite of great strides in the synthesis of color pigments and in the formulation of printing ink to meet the demands of modern printing, inks cannot perform miracles. If mistakes are made in one or more of these seven factors, no ink can be expected to make up for the errors. It would require what technical men call an acrobatic ink.

The type of press on which the job is to be printed will affect the ink formulation, and therefore the color matching effectiveness. Different kinds of presses require different bodied inks. More or less ink can be carried under different printing conditions that will affect the hue tone of the finished result.

Each process of printing—letterpress, offset, aniline, gravure, silk screen, or photogelatin—has its own advantages and disadvantages. Colors selected for one process are often impossible to match in another process. Inks for offset lithography are different in formulation from those for letterpress printing, and the amount of ink carried and the printing surface differ with every process. It is not possible to produce the same color in every printing process. One given color in letterpress printing may be difficult to match in offset.

As for the kind of paper or other printing surface, it is important that the printer furnish the ink maker with an exact sample of the stock to be used. Today even this is a variable factor because paper varies from mill lot to mill lot. But the kind of paper with its varying available surfaces will have a great bearing on the viscosity or tack of the ink. With a sample of the paper in his possession, the ink maker can make tests to determine the receptivity of the surface and formulate the ink to fit the particular kind of paper.

Color sequence

With respect to the sequence of colors and ink film thickness, if the job is a multicolored one, the sequence in which the colors will be printed is important, as is whether it is to be run on a single, two-color, or four-color press. In wet printing, each succeeding ink must have its tack properly adjusted to trap properly with the preceding color. The amount of ink carried on the printing plate is determined by adjustments in the fountain. To be absolutely accurate, proofs for each run should be pulled on a proving press using a volumeter to control the amount of ink to be carried. Large jobs often justify proving on a power press with the exact fountain adjustment that will be used to regulate ink feed on the production run.

On speed of drying, faster and faster production now is being sought. On high-speed, web-fed four- and five-color presses, it is now possible to get split-second drying with heat application. But it is unreasonable to expect the same quality of color printing at such speeds as can be produced on single-color presses with drying time allowed between each impression. Nor can the result be expected to equal four-color printing on modern two-color presses.

Printing plates

The kind of printing plates needed is determined by the presses employed. Generally speaking, engravers and electrotypers provide properly etched printing plates. However, the quality of the printing plates will have a great bearing on the finished printing result, and every effort should be made to make certain that plates are made according to the required specifications of the printing condition.

On original copy, any kind generally can be satisfactorily reproduced by some printing process. However, copy in some instances may be so complex as to require a reproduction process that is completely out of line from a cost standpoint. It is reasonable, therefore, to expect that the original copy has been made with an adequate realization of the limitations of the printing method.

Packaging printing

All these elements have been discussed with general commercial printing and publication printing in mind. But there are other types of printing in which color matching becomes even more complex, such as the packaging field. Here an entirely new set of conditions and specifications face the ink formulator.

To meet today's package printing demands, the ink formulator should have the following information:

Will the package be exposed to sunlight? Will it be subjected to heat or moisture? Will it be handled often? Must it be impervious to deteriorants

such as alcohol, soap, alkalis, acids, perspiration, oils, fats, butter, hot paraffin, adhesives? What kind of printing surface will be used—paper, clay, machine, or patent coated board, metal foil, plastic sheeting, or the many other new materials and combinations of materials? If a metal container, what are the baking temperature and baking time?

The character of a container's contents will have considerable bearing on ink formulation, and new demands for wet varnishing of the last color introduce some additional problems for the printer.

Specify in dummy stage

The right time to specify colors wanted for package printing inks is when the package is still in the dummy stage. Many designers now check color schemes with the printer and ink supplier before submitting designs to the client. This avoids possible disappointment by the discovery later that satisfactory inks cannot be formulated to meet required specifications or to guarantee uniform color results.

The selection of color for package printing is limited by the specifications the ink must meet. If light-fastness is demanded, the selection is smaller but there is still a wide range of colors available, and the printer can be reasonably sure that these light-fast colors will not change for the life of the package.

Having obtained the proper color match, it is often necessary to set up color standards to maintain uniformity, and precision methods are necessary. For permanent color standards, spectrophotometric measurement is recommended as in the American Standards Association Specification and Description of Color Z-44.

Measuring color

Precision measuring devices, as the recording spectrophotometer, accurately analyze colors and furnish monochromatic specifications in terms of dominant wave length, brightness, and purity. Precise color description with press tolerances can be permanently established and used for color uniformity, especially for large production runs where various plants print the same job.

Any recognized three-dimensional system of color notation will satisfy the ink maker as long as it gives the hue, value, and chroma, or the dominant wave length, brightness, and purity of the color. These are precise characteristics and tell the ink maker what the color required is supposed to look like on the finished sheet. Given all the other information required, he will then be in a position to do the best job of formulation.

Many ink suppliers now furnish their color books with the American Standards Association standard specification and description of the colors. Purchasing practice during the war greatly accelerated the use of this type of specifying and describing color, and it is hoped that it will come into wider acceptance and use.

There are still further variations in printing techniques and the inks used for them, all of which have their own color matching problems. These include jobs that require gloss or non-rub and non-scratch characteristics, textile bag inks, perfumed and fluorescent inks.

Newscolor

Today there is a revived interest in newspaper color printing. This trend had already been greatly accelerated before the war. Now, more than 400 newspaper plants throughout the country have announced that they are equipped to handle one, two, three or more colors with black.

It is apparent that this type of color printing on news web presses will be in a class by itself, with its own individual problems. Excellent results can be achieved if the color printing is properly engineered in the newspaper plant with full cooperation of equipment manufacturers and the ink supplier. On the other hand, colors printed on coated stock cannot be duplicated in fast newspaper printing on soft newsprint.

The behavior of color under various conditions should be considered. The effect of backgrounds that produce simultaneous contrast changes has often deceived a customer into thinking that the color match was wrong when actually the viewing condition was at fault. Any two colors placed close together will have an effect on each other. These effects are avoided with proper knowledge and understanding of color behavior.

Viewing conditions

The effect of the various kinds of light on a color is also of major importance. Lighting conditions may eventually be standardized and every printing shop, printing buyer's office, and ink manufacturer will adopt the same standard simulated daylight equipment. This would eliminate many of the difficulties in color matching. Two colors may match in daylight and be quite unlike each other under average tungsten artificial illumination found in many printing plants.

Practical color samples

Accurate descriptions and practical samples are important. It is asking too much of the color matcher to furnish the ink maker or printer with a water color sample, a piece of your wife's discarded evening gown, or a corner of a sheet of coated paper and expect him to match it in printing inks.

And finally, there is the variation in raw material supply. The buyer of printing and the production man should know that it is possible to produce the same shade of color from different materials. For example, at one time before the war there were 26 sources of Lithol Red, and the characteristics of each varied greatly. Only the most rigid checking and control at the factory made uniformity in the ink formulation possible of attainment in such instances.

Color formations varied

Even if the colors are made from the same pigment, their formulation will differ in other ways, depending on the use to which they will be put. Different oils, resins, solvents, binders, and driers may be used with the same pigment, but the final color will be the same within reasonable limits.

The demand for color printing has been taxing the production facilities of every supplier. More and more, the buyer of printing is recognizing the necessity for furnishing complete information and specifications to the ink manufacturer for the best results in color matching. More recognition of precision methods and accurate color measurement will bring still greater improvement in meeting color matching problems of the printer.

The fundamental scientific principles of color are still the same as when they were first discovered by Newton, Young, Maxwell, and Helmholtz, but it is only recently that it is beginning to be recognized that these principles are important factors in changing the art of color matching to a science.

[For further data on color notation see the Cross-Reference Subject Index. See also the lead article of this volume on the subject of "Light and Color."]

Fluorescent water colors

Photographic method for achieving nearly complete color correction reduces hand work on plates; ultra-violet light is used by the platemaker

Stewart M. Harding

Reproduction processes do not always reproduce colors satisfactorily. Because the best process inks are not sufficiently pure in color, and because there are certain other deficiencies in the mechanics of platemaking and reproduction processes, the colors—particularly greens and blues—in an uncorrected reproduction are degraded by the presence of other colors; they appear lifeless, dark, and uninteresting.

To reproduce original colors satisfactorily, it has been necessary to alter tone values in the printing plates by skillful hand work guided by experienced color judgment of the technician.

Color correction

Color correction is an all-important step in any method of photo-mechanical color reproduction. This is the work of the etcher in photo-engraving, who works by hand on the copper halftone plate. Similar corrections are made in photo-lithography by dot etching the halftone negative or positive, or by other retouching. In photogravure, hand work is applied to continuous-tone negatives or positives. The making of these corrections is an advanced art and involves considerable time and expense.

The Kodak Fluorescence Process represents a new approach to the problem of color correction, in that its object is to improve the characteristics of water-color originals for reproduction, rather than to introduce corrections at a later stage of the process.

Density increased

The original sketches are prepared with special water colors which fluoresce in ultraviolet light. When the "red" and yellow printer negatives are made from these sketches, they are exposed by a mixture of white light and ultraviolet light. The ultraviolet causes the sketch to fluoresce, adding to the density in the negative areas requiring correction. The necessary amount of hand work is greatly reduced, and a significant saving is effected in the time and expense required to produce printing plates that will be satisfactory.

The Kodak Fluorescence Process can be applied in all reproduction processes, for all work done from water-color originals—wash drawings, line drawings, and airbrush work as used for illustration, design, and layout purposes. Magazine illustrations, calendars, posters, greeting cards, bridge tallies, and postcards are but a few of the items that make up the great volume of printing that originates in water-color sketches.

The term "fluorescence" may require explanation. Certain objects and materials can absorb light of short wave-length and emit radiations of longer wave-length. This is known as fluorescence. Ultraviolet usually is used as the exciting radiation, and in such a case the fluorescence is visible and generally colored.

The explanation of this phenomenon, like that of the nature of light, is still subject to controversy. For its practical use, however, it is sufficient to know that it is an observable, repeatable occurrence. Fluorescent carpets and paints are available for theatre decorations, and fluorescent inks and powders for various identification purposes. Further practical application of the phenomenon described above is now made in the Kodak Fluoreseence Process.

Water colors in sets

Kodak Fluorescent Water Colors are available in sets containing eighteen colors, and also are sold separately. Two additional colors, Highlight White and Opaque Gray also are supplied. The fluorescent Highlight White can be used, when desired, to obtain drop-out highlights; it is not required for regular procedure in the Fluorescence Process. The colors can be obtained through any Kodak dealer.

To obtain basic colors for a palette that was to be reproducible by regular process printing, three colors were selected that matched printing inks as closely as possible. These were the No. 1 Yellow, No. 6 Rose, and No. 10 Peacock Blue, corresponding respectively to the best yellow, "red" (magenta), and "blue" (blue-green) process inks on the market. Colors No. 4 Orange-Red, No. 8 Violet, and No. 12 Green are the hues that should result when solid impressions of two process inks overlap.

Fluorescent scale set

The extent to which each color fluoresces has been established according to the relative amount of correction required by each color for accurate photo-mechanical reproduction. For example, the greens, which require the greatest amount of correction, fluoresce the most brightly.

This bright fluorescence registers as increased density on the "red"-printer negative, so that the red is not permitted to print heavily enough to degrade green areas in the reproduction. The same principle applies to the corrections required for other colors.

The fluorescent colors differ from usual colors in certain respects other than their quality of fluorescence. Because they are especially designed for the preparation of copy for reproduction, they include only those colors that can be reproduced with the best four-color process printing inks. They do not include colors such as Emerald Green or Ultramarine Blue, which require extra impressions with special inks for accurate reproduction.

To assure accurate reproduction, some of the brighter colors have been intentionally and carefully grayed to match the colors obtainable in four-color process printing. In using these colors, the artist works with the assurance that his sketch will not present difficulties for reproduction. This fact has led several large printing concerns to adopt the fluorescent colors for general use as well as for the Kodak Fluorescent Process.

Another characteristic of the colors is that they are designed to render a satisfactory black printer when photo-

graphed by infrared light. The infrared absorption of the black and browns is carefully balanced, with the result that a properly made sketch yields a nearly perfect black printer.

This should be considered in making the sketch. For example, if red is worked into a green shadow to darken it, the shadow modeling will be lost and the spot will be reproduced as a flat, unshaded area of color because it will not be recorded on the black printer and most of the red will be eliminated by the fluorescence of the green. Artists may find it convenient to pre-mix small jars of dark colors: green and black, blue and black, violet and black, etc.

Shading with black

Many artists have been trained never to shade colors with black, and even to omit black completely from their palette. This was a rather radical reaction from certain old abuses but as long as the four-color printer carried black in at least the deeper shadows and grays, there was no real point in keeping black out of sketches whose main purpose was to produce a set of printing plates. One color may be printed over another and the effect will reproduce substantially as it looks to the eye.

In working properties, the paints are not radically different from any good tube water colors.

Fluorescent sketches are prepared in the usual manner, with little change in the artist's working technique. The colors are highly satisfactory for airbrush work. If the drying rate is too rapid to suit the artist's technique, it can be slowed by mixing ethylene glycol with the diluting water.

To assure best results, the artist should observe a few normal precautions in the use of the fluorescent colors. For example, paints of other makes should not be mixed with the fluorescent colors, or used to alter a fluorescent sketch. If this is done, such mixtures or alterations will appear as conspicuous defects in the reproduction and the color correction will be unsatisfactory.

Intermediate hues

Intermediate hues can be best obtained by mixing colors adjacent in the color chart, rather than colors that are widely separated. Dark colors are prepared by mixing black with the desired color, rather than through the addition of a complementary color to the original.

The surfaces used for fluorescent sketches should have as little inherent fluorescence as possible. Materials that have been tested and proved satisfactory include Whatman C. P., Chimatco board, and certain smooth bristol boards and clay-coated card stocks. Gray or colored papers cannot be used because these would affect the balance of fluorescence among the colors, and cause color correction to be unsatisfactory.

Color stability

Kodak Fluorescent Water Colors are moderately stable, and are considered to be entirely satisfactory for commercial sketches that will be reproduced within a reasonable length of time. They are not recommended for permanent fine-arts work, or for long exhibition in daylight or ultraviolet light.

When fluorescence-corrected separation negatives are to be made from a fluorescent original, it is necessary for the sketch to be illuminated by the correct proportion of ultraviolet and visible light. This can be provided most conveniently by means of a Kodak Copyboard Hood. This hood excludes extraneous light from the copyboard and provides adjustable filter units through which the arc lamps are directed. The filter units contain ultraviolet-transmitting glass filters and an adjustable slit through which visible light is admitted. With this device the correct proportion of ultraviolet and visible light is combined in one exposure for each negative requiring correction.

The hood is set up permanently, but rests on rubber-tired wheels, and can easily be moved forward and back with the copyboard, or out of position entirely when the camera must be used for work not requiring ultraviolet light.

Hand work reduced

The fluorescent water colors provide a photographic method for achieving nearly complete color correction. Thus they eliminate much of the hand work otherwise required in reproducing watercolor originals. As a result, elaborate color designs can be reproduced as easily as simple color sketches. Artists can use colors freely without fear of increasing plate costs.

In ordinary light, the fluorescence of the paints is invisible, so artists and customer are unhampered by any abnormal appearance in the sketches. Of course, if the need should arise, they could be reproduced by the older methods. The coloring materials in these paints are common pigments regularly used in ordinary paints as well as in regular printing inks.

In daylight, fluorescent sketches cannot be distinguished from ordinary ones. However, when examined in a darkroom under ultraviolet rays, the ordinary sketch is almost black, while a fluorescent sketch glows brightly with a variety of striking colors that range from spectral violet to greenish yellow.

The hue of the fluorescence roughly follows the white light hue of the associated paint pigment, except that magenta and purples are given a violet fluorescence with no red in it. The violet fluorescence is entirely cut out by a Wratten No. 8 yellow, or any green, filter, while the green fluorescence is completely absorbed by a blue-violet filter. An efficient filter for this separation is known as Wratten No. 34A.

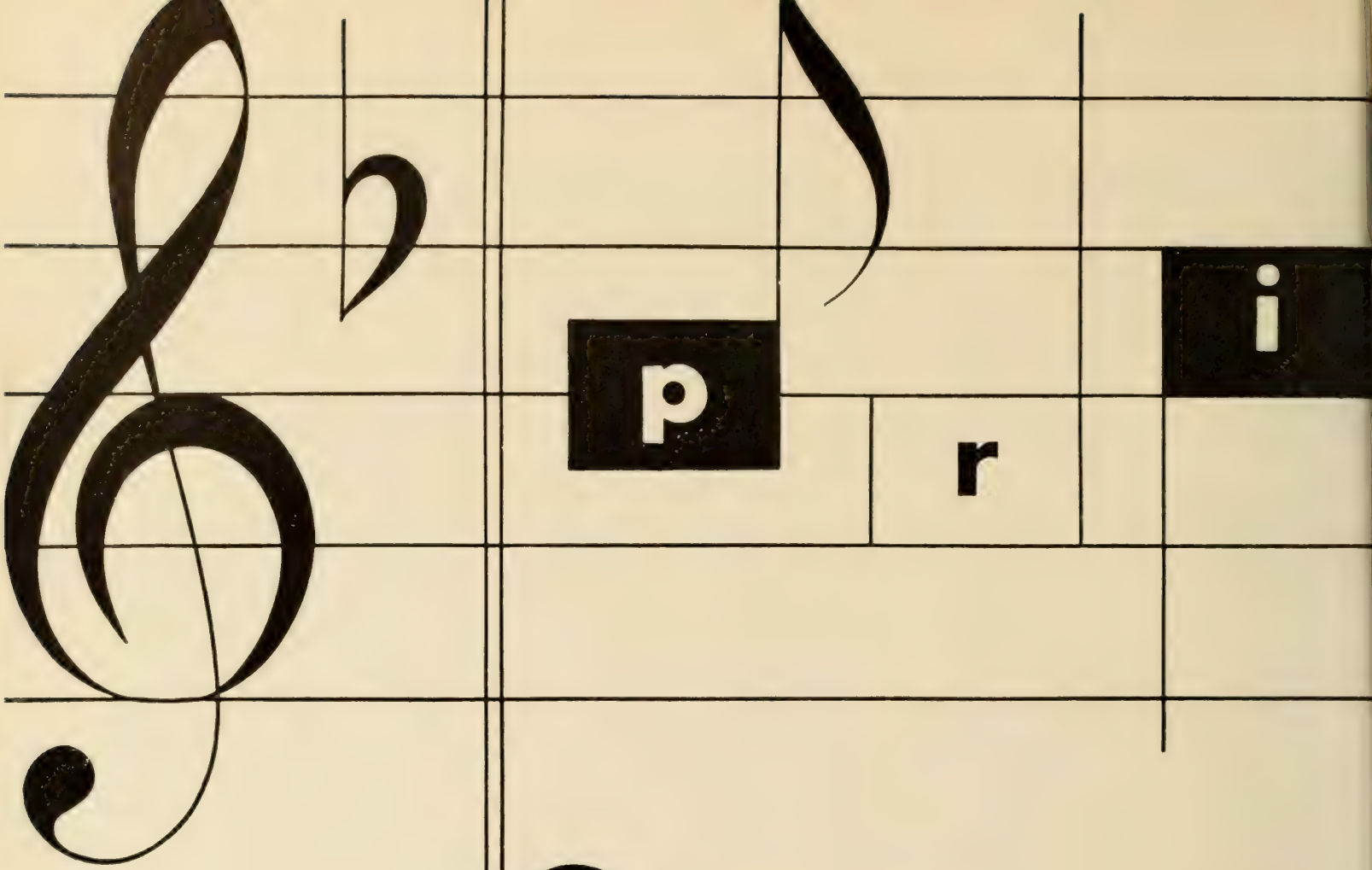
The fluorescence of each color has been balanced carefully against that of all the others, so that each one will have just the right proportionate correction on the separation negatives.

Coördinated production

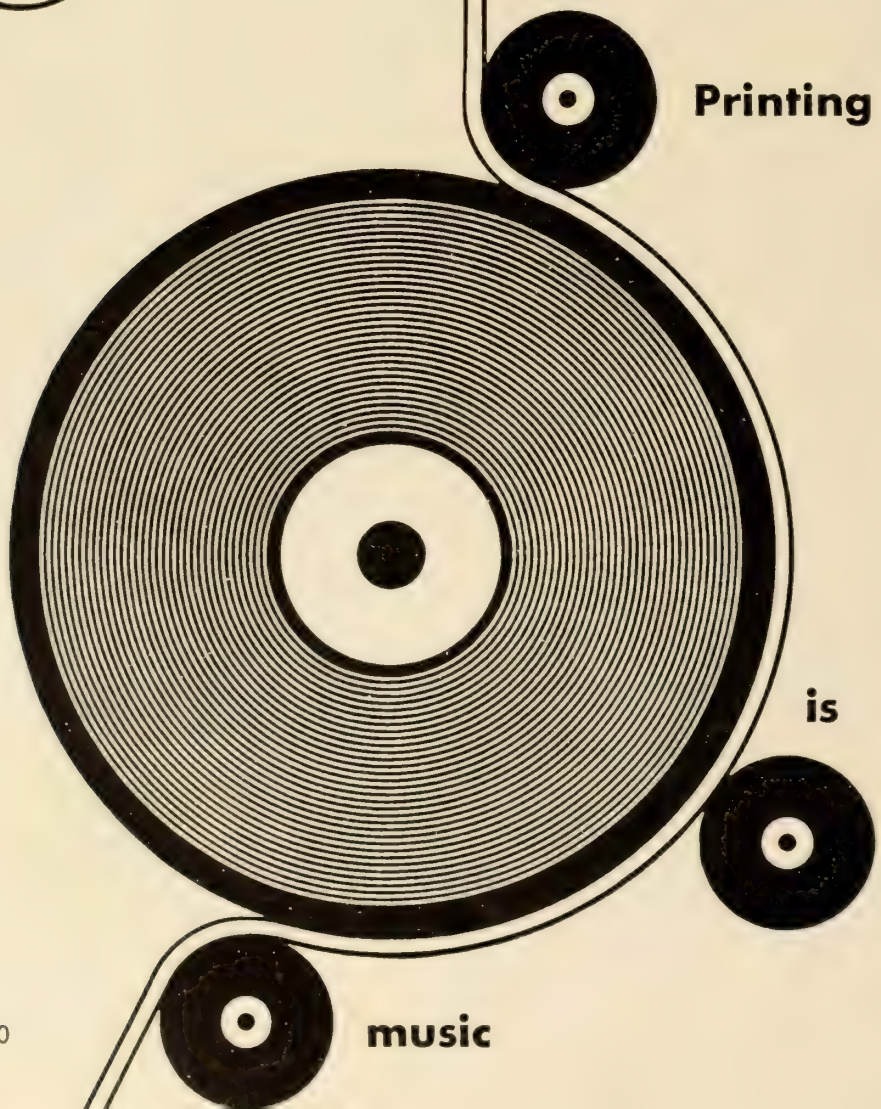
As with all color work, success in using the Kodak Fluorescence Process depends upon the skill of the craftsmen in successive steps of the reproduction procedure. It is imperative that the camera operator, plate-maker, and pressman work together to assure a satisfactory result. With such cooperation, the process can be employed to produce beautiful color reproductions quickly and at reduced cost.

Color correction is usually thought of as a method for controlling the color tone values in continuous tone negatives or positives before the making of final halftone negatives. The Kodak Fluorescent Water Colors claim to move the work of correction to an earlier phase of the production procedure with resultant savings in time and in money, whether used in the making of color plates for letterpress, lithography, gravure, or photo-gelatin.

Correction methods used by printers and platemakers include masking, staining, dot-etching, and back-staging. While not all of this work can be eliminated, it is claimed that the use of the fluorescent water colors greatly reduces the amount of plate correction that must be done by the photo-engraver, lithographer, or the gravure or collotype platemaker.



Printing



is

music

"Printing is music" isn't mere poetic license. That is what printing is when you send it forth. Whether you broadcast symphony or catterwaul, is up to you. Acceptance of your song is applause in sales, but rejection is anything but music to your ears. This should be a record for you to play. It is. And the record is imperishable. It's printed!

n t i n g

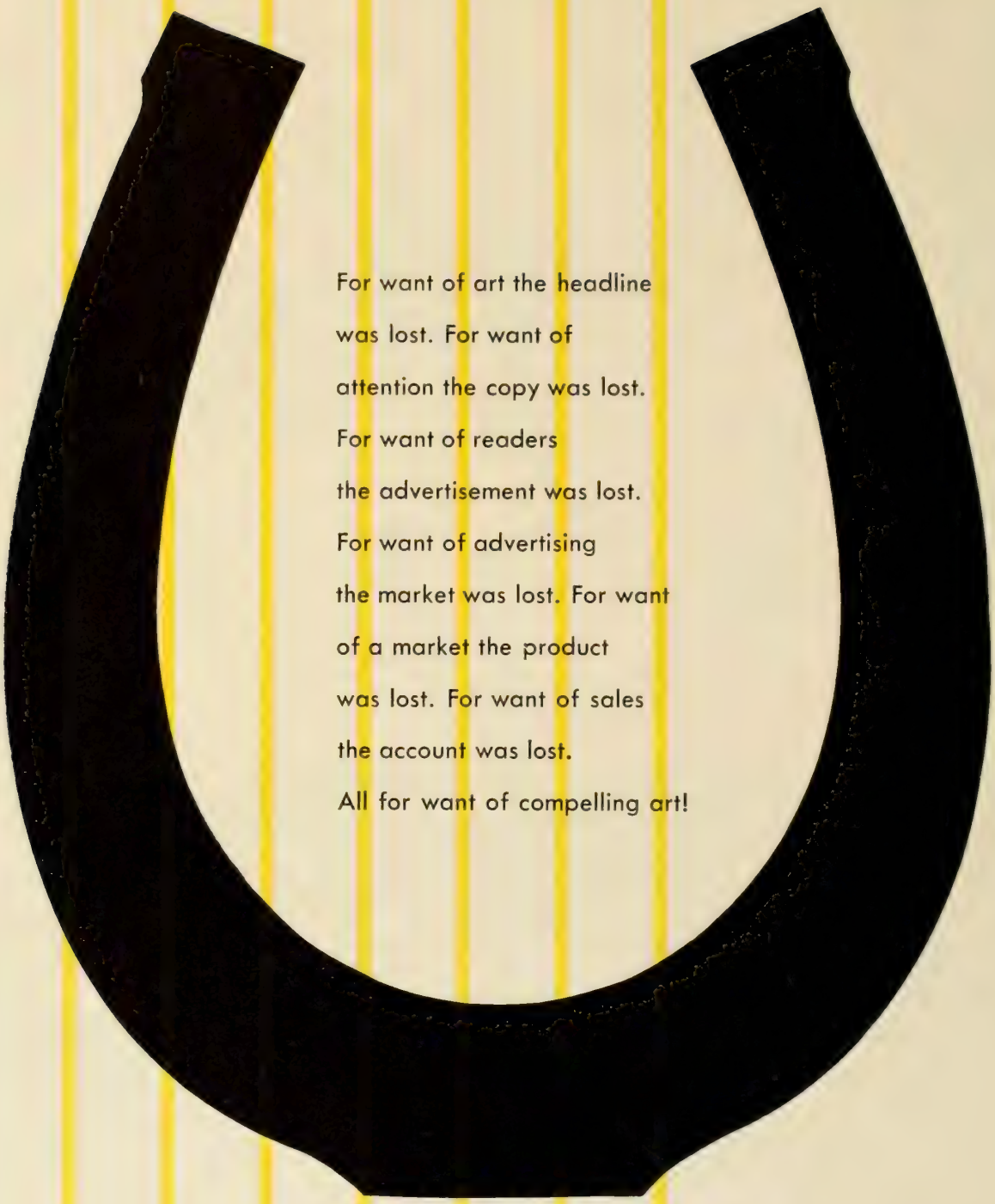
Painter: Julio de Diego

Advertiser: Farnsworth Television and Radio Corporation

Agency: N.W. Ayer and Son, Inc.

Engraving: 4 color process, 120 line screen





For want of art the headline
was lost. For want of
attention the copy was lost.
For want of readers
the advertisement was lost.
For want of advertising
the market was lost. For want
of a market the product
was lost. For want of sales
the account was lost.
All for want of compelling art!

Painter: R.R. Bouche
Advertiser: Elizabeth Arden
Agency: Blaker Advertising Agency, Inc.
Engraving: 4 color process, 133 line screen

For want of a nail...









Printing
can be a ballet
in action

Painter: Marc Chagall
Photographer: Gjon Mili
Advertiser: Farnsworth Television and Radio Corporation
Collection: Capehart
Agency: N.W. Ayer and Sons, Inc.
Engraving: 4 color process, 120 line screen

And it is! For those of you who know that paper is a stage, that ideas are patterns, and that words and pictures are things that can dance.

Think of your printing as a fine production, as a sensational smash hit.

The footlights are the eyes of your audience.

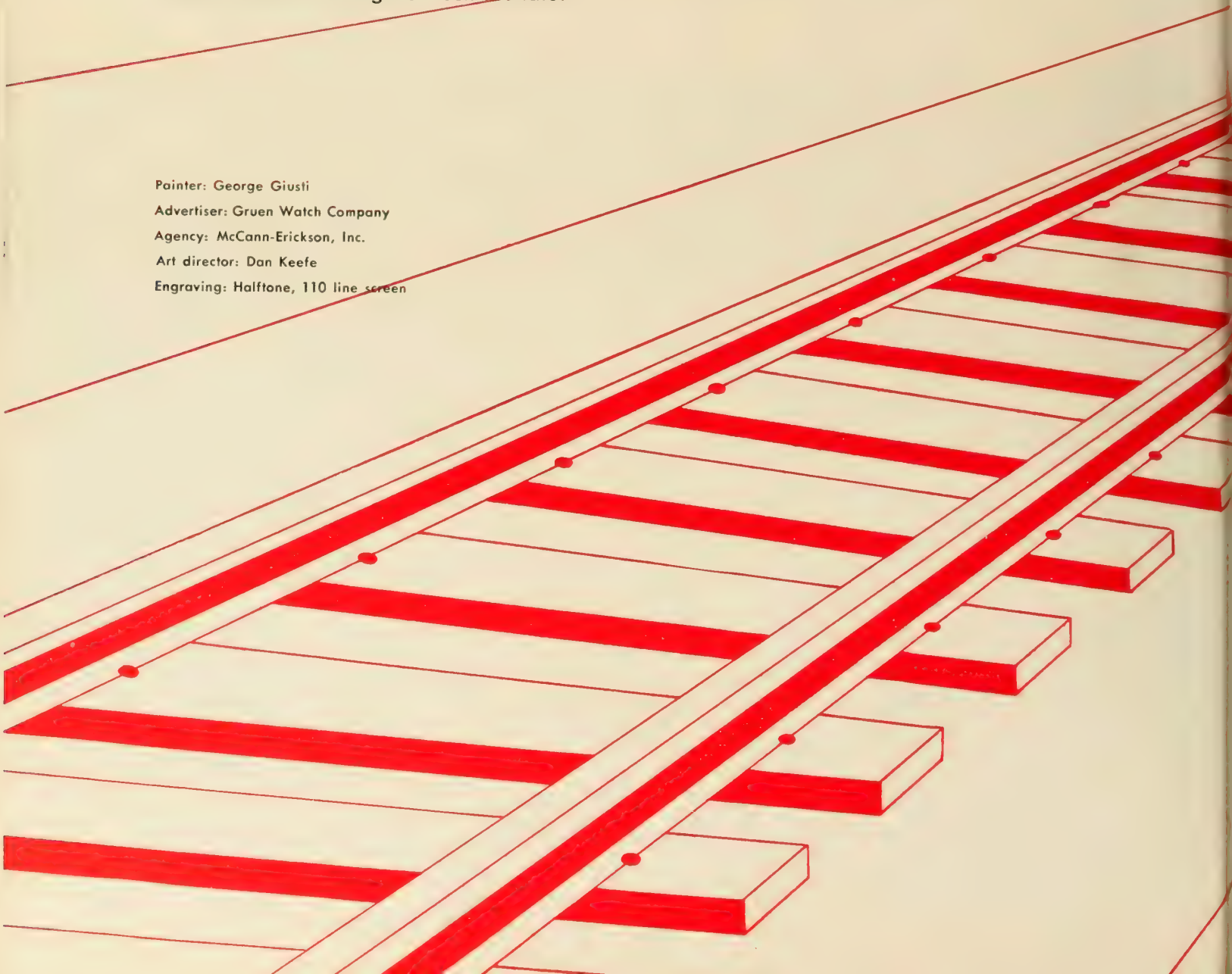
Does your printing dance?

No need to ask the experts. Just ask your cash register. When it says "yes" with profits, you do have a smash hit.



Printing is a train. It is a train of thought
that lives from generation
to generation. It is the train on which
are loaded all the records of
progress in human affairs from the first
cave man's drawings to the latest
full-color web perfecting presses.
It is a train that never stops
at stations. Only running, hustling
people can catch it. A little too
late or too outdated with an idea, with
a reproduction technique,
or with a sales message is much too late.

A littl



Painter: George Giusti
Advertiser: Gruen Watch Company
Agency: McCann-Erickson, Inc.
Art director: Dan Keefe
Engraving: Halftone, 110 line screen


o late . . .
. . . . . .
is
much
too
late

T

is for type
which, chosen with care,
proclaims you a craftsman
to folks everywhere

Painter: Fred Steffen
Advertiser: R.C. Allen Inc.
Agency: Wesley Aves and Associates
Engraving: Line

abcdefghijklmnopqrstuvwxyz



abcdefghijklmnopqrstuvwxyz



Who'd ever think of a composing stick as an arena where battles are fought? Who thinks of a printer as liaison officer between the headquarters of art and copy, and the battle front of sales? But there type stands as free to us, under the freedom of the press, as the air is to our war planes and airliners of peace. A printer set it in a composing stick, to match the style and purpose of the art. That printer worked as master builder, from a blue print called a layout. He built to specifications most exacting, for that is the real secret of setting type that will be seen, read, and believed.


Figures
in



motion

Figures in motion? Why, they're
all just standing still.
Yet by a trick in off-register color
printing, you get the feeling
of motion. Because the red plate
had more strength than
the black, it was used on the two
color side for printing
both the red and the black inks.

Painter: David Hill
Advertiser: Container Corporation of America
Agency: N.W. Ayer and Son, Inc.
Engraving: 4 color process, 120 line screen

There is a precision in the human body, in the construction of each bone and muscle and the manner in which they function together. And there is precision in every cog in a machine and in the whole machine. But the finest of cameras and presses are only as good as the men who build and run them. They can reproduce only those designs, those messages which the mind and will of man have created.



Precision is born
of the mind
and will of man



Engravings: From a nineteenth century encyclopaedia

Your engraver can be a sculptor

Sculptor: Isamu Noguchi
Photographer: Herman Landshoff
Magazine: Mademoiselle
Publisher: Street and Smith Publications, Inc
Engraving: 4 color process, 120 line screen



And he is! He is just that, whenever you realize that even though his plates be flat and two-dimensional, when they are impressed on paper they take on a third dimension not measurable because there is no finite quality. This is not magic. It is an infinity of dots merging into patterns and plates; all on sheets of paper painted upon by a printer. If you would print a message upon minds of millions, consult your printer.



Hey diddle diddle!



Painter: Simka Simkhovitch
Advertiser: The Upjohn Company
Agency: William Douglas McAdams
Engraving: 4 color process, 120 line screen



Artist: Lombard Jones





The cow that jumped over the moon got that way by flitting across from a four-color process page to a single-color, black-of-the-night page, giving you that climb-to-the-sky feeling. Note how the casual overlapping of colors has created the effect of continuous and kinetescopic motion.

Cameras for color

One-shot cameras make three separation negatives of subject simultaneously; two recently developed cameras can produce four negatives

Allen Haversham

Almost any camera can take a picture in color, but the trend in the last few years has been to make available to the professional photographer precision equipment for quality pictures.

Regular cameras, with fast, fully color-corrected lenses and accurate shutters, can be used for color photography by loading them with a color film such as Ektachrome, Ansco Color, or Kodachrome. High quality results are achieved by both professionals and amateurs in this manner and excellent, unposed, natural appearing shots are often obtained.

Specially built for color work are the one-shot and three-shot cameras, the former being illustrated below. These cameras use a color-sensitive black-and-white film, recording the colors of the object in gray values on a set of separation negatives, as explained in the caption accompanying the diagram at the bottom of this page.

A three-shot camera makes a separate exposure for each separation negative. The camera must also be motionless so that the three negatives will be in perfect register. To speed up commercial work, three-shot cameras with sliding backs are used. The sliding back permits exposure of one negative after another with the proper filter in more rapid succession.

The first reasonably successful three-shot cameras used semi-transparent glass reflectors behind the lens that simultaneously reflected and transmitted the rays from the lens to three different planes in the camera.

The use of glass reflectors, however, leads to optical distortion of the image that is almost impossible to correct, and negatives made in this manner usually have to be registered by trick methods in printing. Successful one-shot cameras were finally achieved by a few manufacturers using thin membrane or "pellicle" reflectors instead of glass.

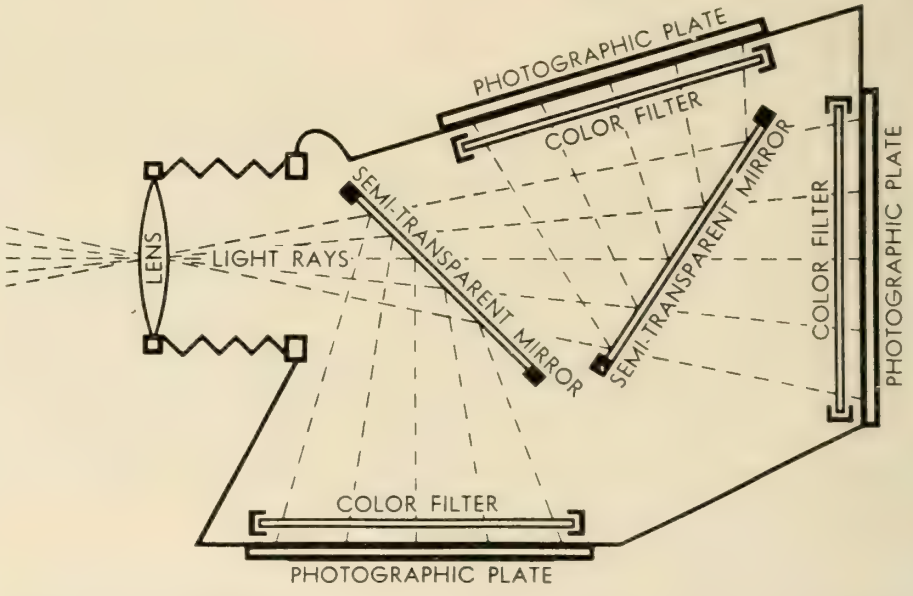
These cameras are available in two designs. One, with only one reflector, is known as a "bipack." In this type, the light from the lens is split into two rays. One falls upon a pack of two films placed face to face in a special holder and so adjusted for color sensitivity that they record separate bands of the spectrum. The second ray falls upon a separate film to produce the third band of the spectrum.

Color separation can be very accurate in this type of camera but sharpness or definition is lacking in the back component of the bipack. Hence, the results are not suitable for most commercial work, and bipack cameras find their greatest application in portraiture. The two-mirror, one-shot color camera illustrated on this page is truer.

Recently, two four-color one-shot cameras have been perfected to give truer black plates that now are made by faking or by combinations of other plates.

One camera, Thomascolor, photographs four-color separation negatives on the same panchromatic single emulsion black-and-white film. Three of the images are exposed through appropriate color filters; the fourth uses no color filter. Neither beam-splitters nor photographic mirrors are employed. After developing and processing, the four images, being on the one film strip, must be cut apart. The four negatives can be screened simultaneously by placing each at a different angle.

The other camera, perfected by Huebner Laboratories, photographs the black or gray at the same time as the three colors. The photographer who develops the plate can insert it in the camera, with assembler attachment, turn on and immediately produce in full color the four images superimposed into one color image, which can be viewed and serves as copy. The same single plate then is inserted in a standard process camera and enlarged or reduced to the required size directly through a regular halftone screen, which in turn then produces a standard halftone positive.



One-shot color camera: In one exposure, this camera makes a set of three color-separation negatives of a subject. Light rays pass through semi-transparent mirrors and also are reflected by them, thus striking the three plates simultaneously. Each negative obtained is a black-and-white tone interpretation of the gray intensity (value) of its corresponding color. The peculiar shade of blue, red, or violet (chroma) etc., in a scene or object is not captured by the negative, but is restored as accurately as possible by the dye used in making a photographic print or by the ink used in printing. Negatives simply record color intensities (what Munsell called Value). Each negative is exposed through a selective color filter to record just the desired light rays.

Color notation systems

Scientific systems of color notation identify colors accurately, show how they are related to each other, and facilitate faithful reproduction

Daisy Rieger

The greatly increased use of color in printing in the last few years has considerably multiplied the problems of the production man. One problem he must now face with increasing frequency is to identify and reproduce a color.

Systems of numerical designation for color are of increased importance for a number of reasons. Firstly, the various colors that the eye sees are so numerous that names would neither adequately describe nor accurately differentiate between them. Secondly, only a scientific system of notation could indicate how close certain colors are to each other and in what respect. And thirdly, a notation system makes it easier to more accurately duplicate selected colors.

Newton's circle

The earliest attempt at color notation was made by Sir Isaac Newton, who regarded all colors as forming a circle. Later, physicists discovered that a wide range of colors could be reproduced by combining only three colors: red, yellow, and blue.

As early as 1689 it was realized that the theory of color's forming a circle was inadequate, and a three-dimensional concept was evolved. From the reliance on three colors to produce many, it was logical that a system of notation should first be based on the triangle and later the pyramid. Current notation systems index colors in spheres and double cones as described below.

Munsell spherical concept

Albert H. Munsell (1858 to 1918) devised a three-dimensional system of color notation that is in wide commercial use today and has been accepted by the United States Bureau of Standards. Munsell's three dimensions of color are hue, value, and chroma. Scales for these three colors are part of a sphere.

Hue is the method of segregating one color from another. The 10 basic hues are red, yellow-red, yellow, green-yellow, green, blue-green, blue, purple-blue, purple, and red-purple. These hues form a circular scale on the outer surface of the sphere. The axis of the Munsell sphere is a gray scale in 10 steps from black (south pole) to white (north pole). This is known as the value scale.

Value and chroma

Value defines whether a color is dark or light. Zero on the scale represents black, 10 white. For example, a dark red with a value of two would be noted as 2.

The third dimension of color is chroma. It defines the strength or weakness of a color as a color. As value is the vertical scale and hue the circular scale, chroma is the horizontal scale of the Munsell sphere. The farther away from the vertical axis the color appears, the stronger it is in chroma, it having proportionately more of the hue and less of the gray. Lower numbers on the chroma scale begin at the center or value shaft of the sphere.

Munsell regards colors either as being pure, as varying with the lightness or darkness of the gray value mixed in, or as varying with the proportion of a given gray value to the hue. R 2/1 would indicate dark, blackish red. R 9/8 would indicate a red mixed with very little of a light gray.

This system of notation is very flexible and allows for addition of new colors. Because of the spherical concept, it is easy to select complementary colors, adjacent colors, etc., and to visualize just how they harmonize or contrast. The Munsell color charts are printed with standard inks of known formulation and can be easily duplicated by most ink manufacturers. All the ink-maker need know to duplicate a selected color is the Munsell notation, such as R 9/8.

Ostwald's double cone

The Ostwald method of color notation is based on principles similar to those employed by Munsell. Ostwald uses a double-cone solid to locate and categorize his colors, and works on the principle that all colors seen by the eye are composed of varying combinations of hue, white, and black.

The central pole of the double cone is a vertical scale of eight steps from white to black, each step being designated by a letter. The circumference is a scale made up of 24 chromatic hues. While the Ostwald system has more hues in its circumference than the Munsell design, it is inflexible in that the end points are fixed and cannot be extended to accommodate new colors, as can the Munsell system illustrated on page 60.a

Faber Birren

Faber Birren, contemporary American colorist, has developed a system that also concludes that there are but three basic forms of sensation: color, white, and black. The Birren system consists of 13 hues and nine steps from black to white. Four basic hues, which can be regarded as psychological primaries, are stressed: red, yellow, green, and blue. In describing colors, hues are designated by letters, and are followed by two numerals, the first referring to white content, the second to black content.

Bustanoby system

The Bustanoby Color System, evolved by J. H. Bustanoby, another contemporary American colorist, claims to make it easier to reproduce as well as to identify colors. In this system, developed in collaboration with J. M. Bolognini, basic hues and five shades (hue with black) and six tints (hue with white) of each hue are illustrated on charts. This permits visual identification and selection of desired colors. In addition, formulas for obtaining each are given so that identified colors can be faithfully reproduced.

On the next editorial page are listed 34 color standards with information as to where each of them can be obtained. For a graphic explanation of the Munsell system of color notation see the color page facing page 60.

Color notation systems, continued

The following is a list of color standards and color systems widely used in American industry and science. It is reprinted by permission of the General Printing Ink Division, Sun Chemical Corporation.

American colorist: Designed by Faber Birren and widely used in horticulture, art, and industry. Charts contain more than 500 samples. (One of the most inexpensive color systems ever published.) The Crimson Press, Westport, Conn.

American Standards Association: The most important recent standard for color identification is that issued by American Standards Association, New York, "Specification and Description of Color," Z44-1942. Approved by a number of associations and manufacturers, it recommends the use of the recording spectrophotometer, the Munsell system, and the Inter-Society Color Council method of designation.

Artist's oil paints: Minimum standards to assure satisfactory color, working qualities, and permanence in oil paints used by artists. Adapted by a conference of manufacturers, distributors, and users. Commercial Standard, CS98-42, United States Department of Commerce, National Bureau of Standards, Washington, D. C.

Bathroom accessories: Group of seven colors for bathroom accessories: white, bath green, orchid, ivory, maize, bath blue, royal blue. Accepted by National Retail Dry Goods Association, approved by conference of manufacturers, distributors, users. Commercial Standard, CS63-38, Department of Commerce.

British Colour Council: Dictionary of 180 dyed silk samples accepted by British industry to standardize color names. Published in London.

Camouflage colors: A series of nine colors used as standards by the Army. Specification T-1213, Supplement A and B, United States Army, Corps of Engineers, Washington, D. C.

Cast stone: A group of 14 colors for the finish of cast stone. Recommended Commercial Standard, TS-2126, Department of Commerce.

Color kit: Designed by Faber Birren. Color identification is achieved through the use of disks and a mechanical spinning device. Numerical proportions are developed for all notations. The Crimson Press.

Dictionary of Color: Written by A. Maerz and M. Rea Paul. Shows more than 7,000 samples, with color names based on historical origins, and their current usages. Published by McGraw-Hill Book Company, New York.

Fischer Color Chart: A chart of 108 colors for the description and identification of flowers. New England Gladiolus Society, Norwood, Mass.

Flag of the United States: Scientific definitions of the red, white, and blue approved by all departments of the Government. Section IV, Federal Standard Stock Catalog, Specification TT-C-591, first published on July 3, 1934, Superintendent of Documents, Washington, D. C.

Foundry patterns on wood: Standard system of marking wood foundry patterns, using black, yellow, and red. Accepted by various associations. Commercial Standard CS19-32, Department of Commerce.

Gas masks: A system to identify respirators and gas masks in industry. Colors used are white, black, green, blue, yellow, brown, red. Safe Practices Pamphlet No. 64, National Safety Council, Chicago.

Historical Color Guide: A comprehensive review of traditional and period colors. Contains 146 specimens. Written by Elizabeth Burris-Meyer. William Helburn, Inc., New York.

Horticultural Colour Charts: Published under the direction of the British Colour Council, London. Two volumes, containing about 800 color samples. Used for standardization in horticulture, industry.

Inter-Society Color Council: An effort to develop standard designation for colors, using words commonly understood. Approved by various associations for wide use in science, art, and industry. Research Paper RP1239, Department of Commerce.

Kitchen accessories: A group of six colors for kitchen accessories: white, kitchen green, ivory, delphinium blue, royal blue, red. Accepted by the National Retail Dry Goods Association and approved by a conference of manufacturers, distributors, and users. Commercial Standard, CS62-38, Department of Commerce,

Munsell Book of Color: The most widely accepted system of color identification in the United States. Present edition contains some 400 samples. New and enlarged edition is in preparation. Published by Munsell Color Company, Baltimore.

Ostwald Color System: Widely used in Europe, England and America, contains more than 600 samples. Two series of standards are available, one produced by Winsor & Newton of London, the other by Container Corporation of America, Chicago.

Piping systems: Scheme for the uniform identification of piping systems in industry. Red for fire protection; yellow (or orange) for dangerous materials; green (white, black, or gray) for safe materials; blue for protective materials; purple for valuable materials. Approved by American Standards Association, A13-1928.

Poisons, explosives, gases: The Interstate Commerce Commission recognizes and insists upon special labels for shipments of gases, inflammable liquids, explosives, acids, etc. The colors generally used are white, black, red, yellow, blue, green.

Process colors: Adopted (1927) by the Standardization Committee of the American Institute of Graphic Arts and approved by the American Association of Advertising Agencies and the National Association of Advertisers. Recommended standards for process red, yellow, blue, black.

Ridgway: Most renowned historical color work in America. Contains about 1,000 samples identified by name. Widely used by archaeologists, naturalists. Published by Robert Ridgway, Washington, 1912.

Sanitary ware: Standard colors for plumbing fixtures and allied products made of vitreous china, enameled iron, etc. The colors are green, orchid, ivory, blue, light brown, and black. Adopted by a conference of producers, distributors, and users. Commercial Standard, CS30-31, Department of Commerce.

School bus chrome: Standard yellow adopted for school buses and approved by representatives of the 48 State Departments of Education. International Textbook Company, Scranton, Pa.

School furniture: Standard colors for school furniture, adopted by conference of school equipment producers, distributors, buyers. Simplified Practice Recommendation, R111-30, Department of Commerce.

Sedimentary rocks: Goldman and Merwin Color Chart, showing 114 colors for the description of sedimentary rocks. Division of Geology and Geography, National Research Council, Washington.

Signal glasses: Scientific description of colors used in signal glasses: red, yellow, green, blue, purple, lunar white. Signal Specification, 69-35, American Association of Railroads.

Soil colors: A showing of 54 different colors of soil. Miscellaneous Publication No. 425, United States Department of Agriculture, Washington.

Traffic devices: Standard practices in the use of color on streets and highways for traffic lights, signs, curb markings, etc. American Association of State Highway Officials, Washington.

United States Army color card: Army colors standardized for the different arms and services and approved by the Quartermaster General. Issued by Textile Color Card Association, New York.

United States Army, general paint specifications: Showing of 24 colors used by Army in purchase of paint, related materials. Supplement to No. 3-1, issued by Quartermaster General, Washington.

United States Army-Navy aircraft standards: A group of 15 colors used in the purchase of finishing materials for aircraft. Issued by the Bureau of Aeronautics, Navy Department, Washington.

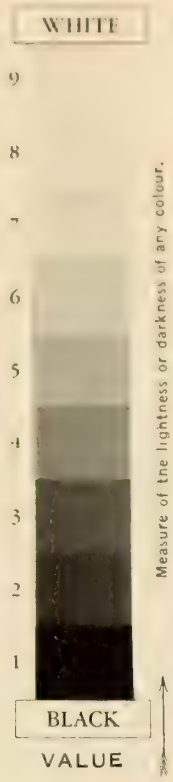
United States ribbons for service medals: General color specifications for the ribbons used on medals and decorations. United States Army, Specification 7-38, Washington.

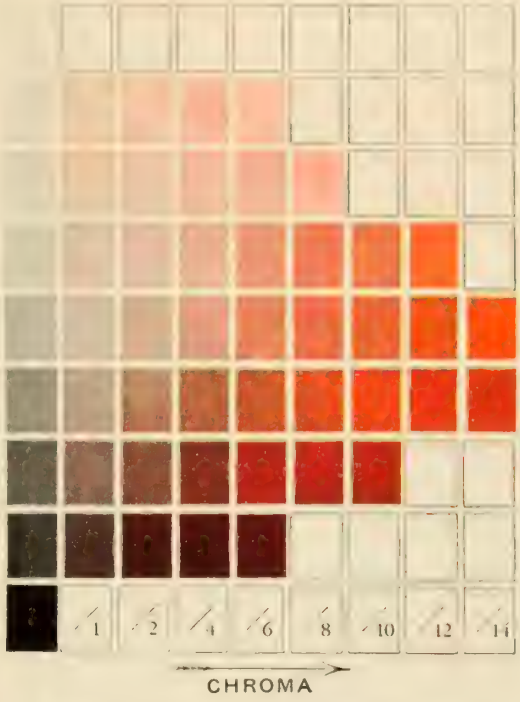
Munsell Colour System



HUE

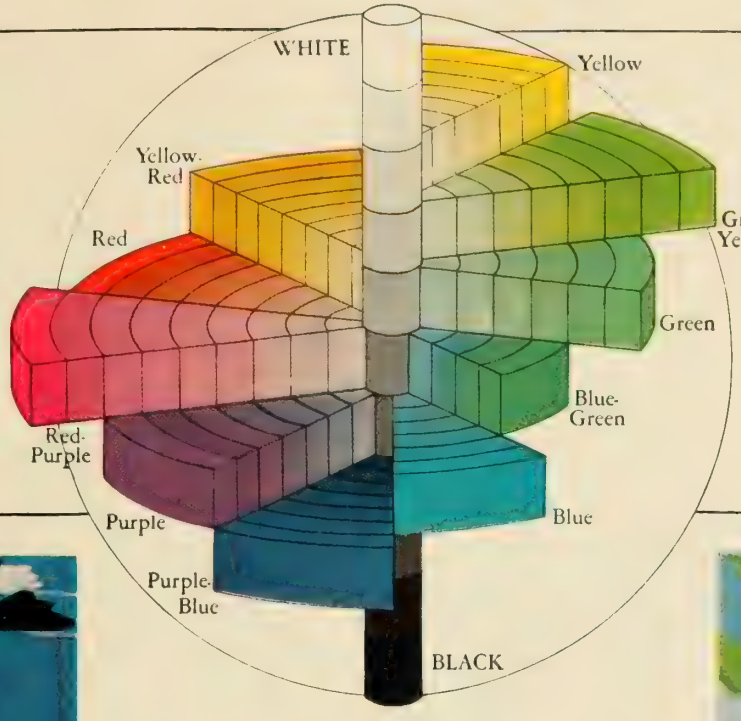
Quality that distinguishes one colour from another.





Measure of the strength or weakness of a colour.

At the right is a projection showing the Principal and Intermediate Hues arranged radially in ten equal divisions about the vertical scale of Value in the same order as the Hue circle above. For simplicity, Hues are shown only at the Value in which they reach their strongest Chroma. A complete Tree would show each Hue developed completely from black to white, as shown in the red Chroma chart above.



THE COLOUR TREE

Example 1



(1)
Purple-blue with grey and small areas of the complementary yellow. Note the yellowish hue of the grey, a result of simultaneous contrast.

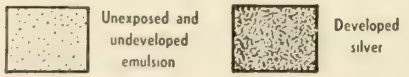
Example 2

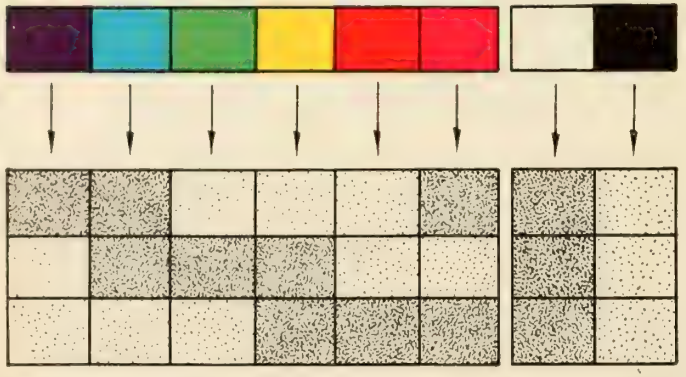


(2)
A free use of a number of complementary hues, purples and green-yellows predominating.

How Ansco Color works

Three emulsion layers, each sensitized to light of a primary color, form dye images in register. Combined they reproduce original colors of subject.





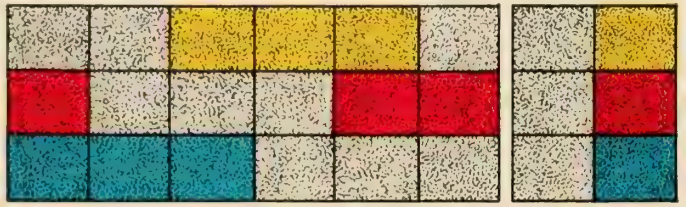
White is the combination of all colors. Black is the absence of all color.

Blue sensitive layer contains yellow color component.

Green sensitive layer contains magenta color component.

Red sensitive layer contains cyan color component.

Exposure records the blue light in the first layer, the green in the second layer and the red in the bottom layer. During the first development black and white images are formed.



Blue sensitive layer contains metallic silver and yellow image.

Green sensitive layer contains metallic silver and magenta image.

Red sensitive layer contains metallic silver and cyan image.

After washing, the film is exposed to white light and redeveloped. This second development forms both metallic silver and colored images in those portions of the emulsion layers unaffected by the first development.



Blue sensitive layer contains yellow dye image.

Green sensitive layer contains magenta dye image.

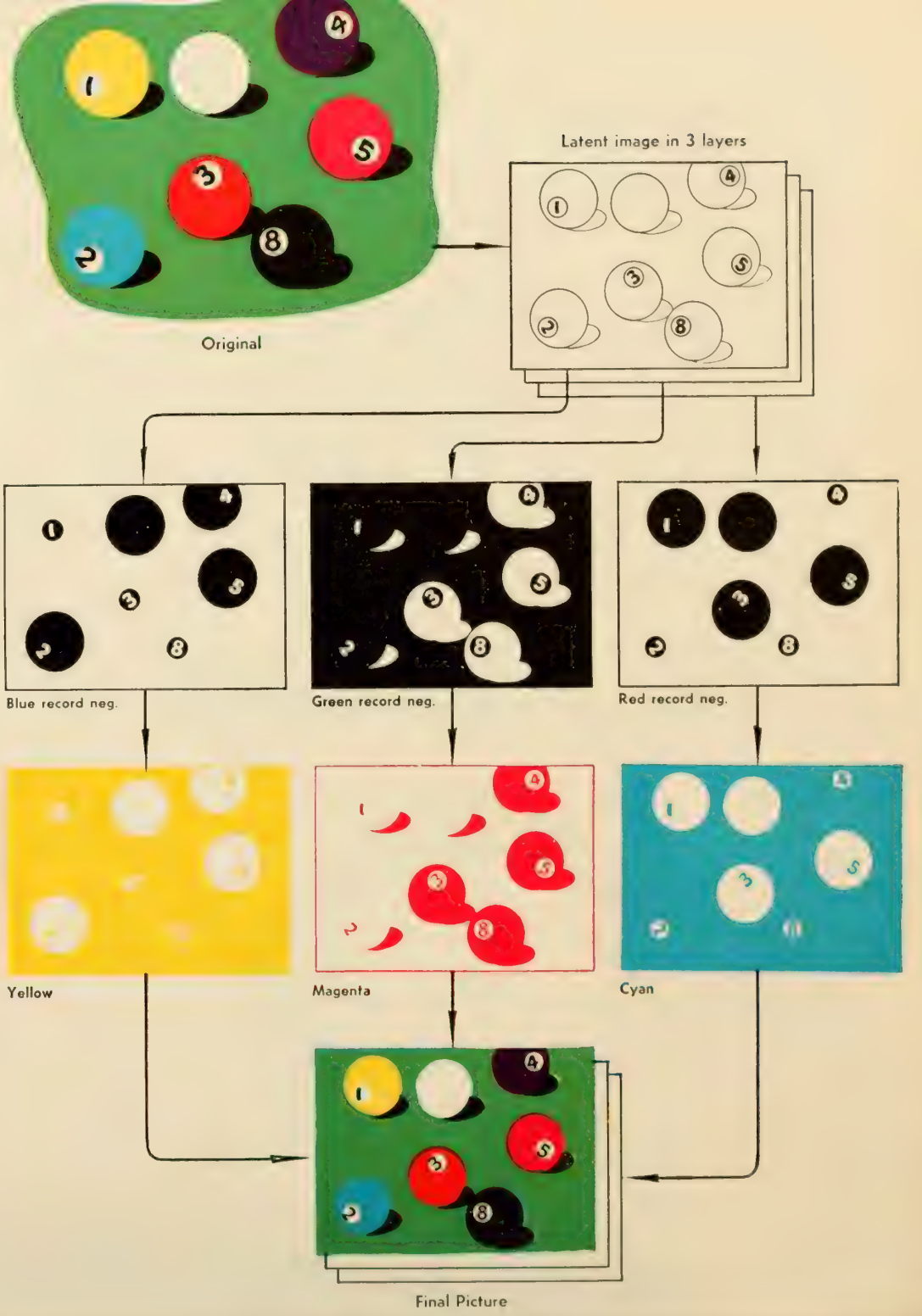
Red sensitive layer contains cyan dye image.

All metallic silver formed during both the first and second development is removed by the bleaching bath, leaving only the dye images in the three emulsion layers.



Three primary colored dye images (yellow, magenta and cyan) when combined in proper proportions, form grays or blacks.

The cyan, magenta and yellow dye images combined reproduce the original colors of the subject.



Velox prints

An economical method of producing line and drop-out effects in tone copy; prints can be retouched and combined with type proofs and line art

Oscar Lefebvre

A screened velox or a Van Dyke print is essentially a screened glossy photographic print made from the original photograph or the art work, and shot through an engraver's screen. Just as the photo-engraver or lithographer makes a screened negative from continuous tone copy before putting the copy onto the metal plate, the photographic or art studio or the platemaker can make a screened negative or positive that can be retouched by the artist before being put onto metal. Screens of 50, 55, 60, 65, 85, and 100 line are readily available.

Used as line copy

Such prints are most generally ordered when it is desired to do considerable retouching on a subject and to obtain drop-out, combination, or silhouette effects at reduced cost. The retouched screened print is used as line copy by the photo-engraver or lithographer.

Most frequently used in newspaper work, the velox print usually is reproduced same size, since a reduction or enlargement will give an unpredictable screen.

The retoucher can take the velox print and paint out undesirable dots to create highlight or drop-out areas, connect dots to achieve line effects, and if he is skilled at his work, can so alter the size and shape of the dots as to, in effect, retouch the original copy.

Particularly valuable where photographic copy of poor reproduction quality must be used, the velox plus the line plate usually cost less than a photograph retouched in the conventional manner plus a halftone, let alone a combination highlight-halftone plate.

For jobs that are to be reproduced by lithography, it is often economical to paste up a velox print with the line art and type or typewritten copy all in position. The lithographer then need make only the one line negative for the job, and the cost of making a separate halftone negative and combining it with the line negative in addition is eliminated.

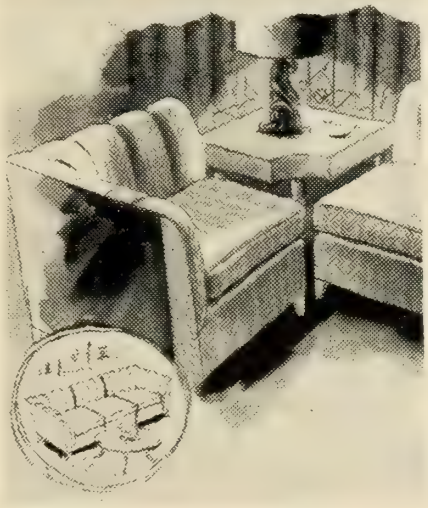
Velox houses usually make the prints from dry film or wet plates. In the former case, two negatives are often made. One is a screened halftone negative. The other, a line negative, is overexposed so that white highlight and drop-out areas of the copy will be as black as possible on the negative. A contact print is made from the two negatives superimposed in register.

The line negative acts as a line mask, the dense parts of the line negative causing the corresponding areas in the print to be dropped out or pure white. Thus, silhouette and drop-out effects are automatically obtained in a screened print. Further retouching can be done as desired by the artist. If some detail of the copy must be held in line, a second line negative, properly exposed, can be made and separately exposed on the print.

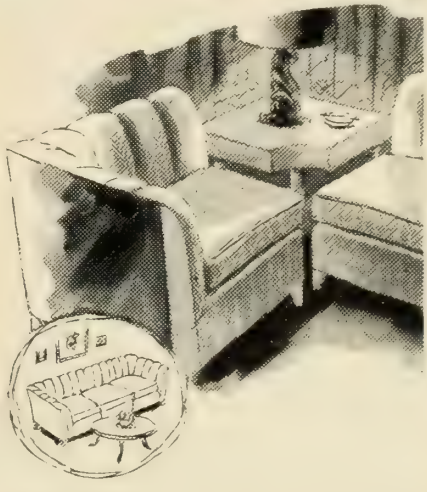
The wet plate method differs from the dry film procedure in that the line and screened negatives are not surprinted to achieve an automatic highlight effect. The halftone and a normally exposed line negative are printed separately. The halftone print is hand silhouetted and opaqued, and the line detail of the line print is painted in by hand. The net result is the same in either process, with the exception that more personal control of fine detail is possible by the wet plate method.

For jobs requiring several cuts, several velox prints can be gang-mounted, one large line cut made, and the individual units cut apart in the engraver's finishing department. Reproduction proofs of type can be mounted in position with the velox so that the whole advertisement will be in one piece. A saving in make-up, lock-up and foundry costs, as well as in engraving costs, can thus be effected. Engravers may charge veloxes as Ben Day line cuts.

For rush newspaper jobs requiring mats, this procedure also effects a saving of time, as the engraving, being of the whole advertisement, can be made two or more up with bearers on and go directly to the foundry for mats without becoming involved with the expense or time necessary in the making of patterns.



Conventional halftone: A wash drawing of furniture and a line sketch were made up and shot as one plate. To have obtained all the line and drop-out effects as in the illustration at the right would involve more costly plates.



Velox print: By making a screened print and retouching it as desired, silhouette and drop-out effects were obtained and where lines or solids were wanted the dots were connected. A line cut was made from the retouched print. Velox itself was used to get client approval.

Facsimile transmission

Most recent improvements include increased speed of transmission, clear reproduction on white paper, and experimental multi-color reception

Samuel M. Sharkey, Jr.

On the basis of progress thus far in the development of facsimile systems of reproduction, two immediate uses for the Graphic Arts or advertising man have emerged:

1. As a potential media (facsimile "home" newspapers) for the placement of advertisements similar in quality to those used in newspapers.

2. In inter-office communication. In Graphic Arts and advertising, the principal application of this is as a means of transmitting copy for checking and approval from one office to another, or from one city to another.

Facsimile involves the conversion of illustrations or other copy, such as printed matter, photographs, line drawings, sketches, etc., either in black-and-white or in color, into electric signals that can be sent over radio or wire circuits. At the receiver, or recorder, these signals automatically are converted back into visible form, appearing as a recorded replica of the original copy.

The result is comparable to a 100-line halftone screen, although Hogan Faximile System reports more definite picture reproduction. This system transmits pictures with a definition of 105 lines per vertical inch and the equivalent of 140 lines per horizontal inch. In facsimile, definition usually implies number of scanning lines per inch of copy.

Received copy permanent

The received copy is permanent and it can be handled, observed, or read wherever and whenever desired. About the only kind of copy that cannot yet be sent with complete success is screened halftones; tests of coarse screen halftone transmission in general show a loss of picture quality. In this case, again, there is the exception that proves the rule: Western Union says it has transmitted halftones with good results, even by transatlantic cable—a service it was conducting even before the war.

The transmission speed at present is about 15 square inches of paper a minute by telephone long line, and about 28 to 43 square inches a minute by Frequency Modulation radio, at a definition of 105 lines to the inch. The coarser the definition the more square inches per minute can be sent.

One of the retarding factors in the development of facsimile has been the chemistry and the paper, which in some respects have not kept up with the mechanical advances in the actual scanning, sending, and reproducing devices. Another is the attempt to increase speed without a resultant loss of definition.

Developing eliminated

However, total elimination of the necessity for developing the paper on the receiving end remains a big advantage over such systems as Wirephoto and Telephoto, in which the received image must be developed and printed, as with a normal photograph.

At present, several types of papers are being used in an attempt to improve reproduction. The principal ones are trademarked Faxpaper, used by the Hogan Faximile System, and Teledeltos, a Western Union invention.

Trademarked Faxpaper is white, moist, and chemically impregnated; the electric current in passing through it deposits iron salts through a stylus or blade on the surface, making black markings identical to those on the original copy. The Faxpaper then is passed over a drier bar and comés out clear, crisp, and dry, the pages being approximately 9½ by 12½ inches. The paper comes in 400-foot rolls, and the reproducing area is the width of four newspaper columns, allowing for column rules.

Teledeltos paper is black and is covered with a wax-like coating. As it receives the image, a thermal current is passed through it that burns off the white and leaves the black type matter showing. This paper is run through dry; some smudging in the finished product has been noted.

In transmission of color copy, the image or copy is received on translucent or transparent gelatine as three color-separation positives that on reception actually are in black-and-white. These films then are developed, bleached in the conventional manner, and dyed to their proper color with aniline dyes or by toning with metallic salt solutions that combine with the silver in the print.

Actually, the color copy has been broken up into separation positives, each of which is transmitted as a black-and-white piece of copy.

The monochrome colored prints are superimposed to form an integral final picture, register marks having been included as part of the transmission; they then are laminated on paper or board back, as with any colored photo print.

Finch Telecommunications, Inc., recently brought out a new method of permanent color reproduction, Colorfax. This system needs no special paper; the color prints are recorded on anything from newsprint to letterheads. At the transmitter, the four primary colors are separated automatically by optical means, and each is used to control the electrical impulses that activate four color "pencils" on the receiver.

The picture is received line by line, and the pencils simultaneously reproduce the four colors; additional colors are achieved by surprinting, in which the pencils mark on areas already colored by one or more preceding pencils. The pictures, which involve no intermediate processing, are comparable to 100-line screen engraving.

Facsimile text can be sent at a rate of 350 to 500 words a minute, depending on the size of the type, etc., as compared with the conventional 65 words sent by teletype printers over long line telephone circuits. This rate assumes use of a private line telephotograph channel.

The American Telephone and Telegraph Company does not represent its long-distance telephone lines as being suitable for facsimile transmission, as such use is prohibited except for the press. The company does, however, furnish specially designed telephotograph channels that are suitable for the transmission of pictures or facsimile material.

Radio transmission

Radio transmission is progressing, especially along a highly directional type of micro-wave whose beam is impervious to static, ice, or storm interruption. This super-high frequency system uses towers 30 to 55 miles apart and can carry 2,000 transmissions simultaneously; sending over a pair of wires is limited to 288 simultaneous transmissions.

At least four pages—in some cases, five—can be sent and reproduced in a 15-minute broadcast period, and since 4,000 to 4,500 words, including headlines and illustrations for attractive makeup, can be set up in four such pages, a facsimile newspaper can deliver considerably more wordage than a radio speaker in equal time.

Standardization — to enable any facsimile receiver to pick up broadcasts from any transmitter in its area — has been the goal of industry leaders for some time. In May, 1947, two committees of manufacturrs, broadcasters, scientists, and newspapers notified the Federal Communications Commission of agreement on a number of standards, including:

1. That the page size be 8x11 inches, or proportionally thereto.
2. That there be 1,155 scalling lines to each copy page—105 to the inch on an 8x11 sheet.
3. That scanning be done at rate of 360 lines a minute—four pages in 15 minutes.
4. That standard radio transmitting pulse be used to synchronize both senders and receivers.

These standards are, of course, always subject to amendment.

In preparing advertising for insertion in facsimile newspapers, production men should keep in mind the same general rules as apply for conventional newspaper ads, particularly with regard to contrasty tone areas for clarity and emphasis. However, complete details as to methods of preparation are not available, as the process itself still is in the formative stage of progress.

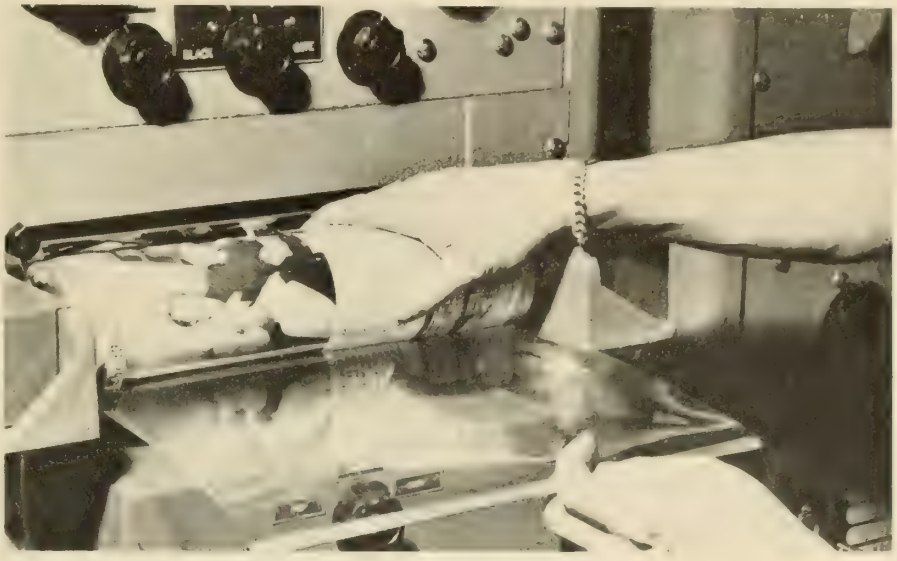
Possible uses

A number of potential uses exist for advertising through facsimile in which the key factor, because of the limited size of the page, would be brevity. Through the medium of facsimile, it is believed it soon will be possible to sell fashion merchandise over the air with line sketches, wash drawings, and photographs; this, in turn, opens up the wide vistas of the mail-order business.

Inter-office systems, such as between branches in various cities, probably would not be possible, as it is doubted that the FCC would allocate the necessary wave lengths for such limited private use. In that case, telephotograph circuits could be utilized, although some users report interference from weather and other conditions tends to affect the image. Transmission over such channels is one-third or so as fast as radio.

Western Union has perfected an advance on its Telefax system by which the public may transmit its own telegrams by dropping them into a slot just as in a mailbox. The machine automatically wraps the telegram around a revolving cylinder in the Telefax cabinet, and the regular facsimile process is followed. Variation of this means of inter-office communication have been adopted by railroads and airlines. Another Telefax variant permits a hardened tip to cut a mimeograph stencil sheet or a hectograph carbon that is placed over the drum in place of the usual sensitized paper to produce multiple copies.

Ultra-speed facsimile transmissions of millions of words a minute are accomplished by using inertia-less cathode ray beams for scanning and receiving; the latter is focused on fast-moving photographic film, which must be developed and printed. Mechanical rotating devices are eliminated. The only apparent limitation is in the availability of frequency acceptance of communication links, whether these involve wire or radio.



Scanning: Copy is wrapped around scanner drum for transmission via Hogan Faximile System. As drum revolves 360 times a minute, photo-electric cell progressively scans page at rate of 105 lines per inch. Four 8.2-by-11.5-inch pages can be sent and received in a 15-minute period. Signal resulting from "scanning" can be broadcast by any FM station. Below is reduced cut of a portion of a typical page that was used in a demonstration that was given by The Philadelphia Inquirer.

WOMEN'S PAGE

May 7, 1947 INQUIRER FACSIMILE Page 4

Eat Fatless Desserts For Low Calorie Diet

By IDA JEAN KAIN

Perhaps you won't thank me, but I've just figured out how far a person weighing approximately 150 pounds would have to walk to burn up the calories in one piece of pie. Fresh cherry pie, lemon meringue or coconut custard counts 100 calories per inch at the top...so just a stingy cut, 3 inches at the circumference, counts 300 calories. French pastries, by the way, count 300 calories each.



Cropping photographs

Making a horizontal picture vertical or vice versa reveals only one of the countless illustration possibilities that are inherent in just one print

R. I. Nesmith

The production man looking for the horizontal picture is often inclined not to see it when it is in front of him; if he is looking for a vertical picture, it may pass under his gaze without ever being recognized as such.

If he has a good eye, he will see that a long, scenic photograph can easily be cropped on either side, and the heart of the picture salvaged. He will be able to see where a close-cropped pattern picture can give a greater impression of volume than if the whole picture had been used.

A good deal of cropping, of course, is done in the professional darkroom. The camera man who prints his own pictures will see that he has captured more detail than necessary, and he merely takes it out in the printing. But his stock photographs are necessarily general—he can never turn out one picture to serve all the purposes of all his possible clients.

A good picture of an airplane is still dramatic, even though there are thousands of them these days, but if the nose of the plane is merely the foreground for a view of an airport, then the plane loses value. The dramatic quality of the picture can be heightened by cropping the airport background and focusing attention on the plane itself. The eye does not adjust itself to two competing impressions in the same picture; it must be led to the key element.



Cropping itself is easy. It can be done simply by making a few marks on the picture. But the by-guess-by-golly method should not be used. The pictures should be viewed in terms of what they are wanted to do, and then made to do it as effectively as possible.

For example, there is shown here a horizontal scenic picture, with the sun setting in the distance, a nice cloud effect, and an automobile on the edge of a hill silhouetted against the light. It is a horizontal cover possibility, with color bands top and bottom; it is an inside possibility, used as an article headpiece, with text below it. If cropped













Picture versatility: Horizontal, vertical, and square cropping not only fits picture for many layouts but yields different effect by shifting the main point of interest with regard to background.

Close-up photos: By the eliminating of so much background and some foreground detail the main point of interest can be made more prominent. A rather impelling, dramatic, and effective picture results. See original below.













on either side to give a vertical effect, while nothing will be lost, there will result a good vertical subject, with the car as the center of attraction. If cropped sharply top and bottom it is a good horizontal tailpiece. If the car is circled, with care taken to retain enough sky and foreground, a decorative spot is achieved.

There is the picture of a boy and girl, looking out over a lake. It is framed by overhanging branches. Here the figures are subordinated to the scene. If for a specific purpose the scene is not important and the figures are, that can be reversed by cropping on all four sides; cropping brings the two figures into prominence by eliminating the sideground distractions.

If a traffic picture is designed to show volume of traffic, then background detail hurts the illusion. The picture should be cropped close, with even some of the cars eliminated, so that the scene takes on a dominant car pattern.

Many railroad shots are taken horizontally; too much detail shows at the side of the train, and the third dimentional quality of the tracks disappearing in the distance is apt to go unnoticed. Cropping should be close to the train, showing the track in the distance so that it appears as though the track is running off the page.

The reader, looking at a picture of a girl applying lipstick in front of a mirror, will not pay much attention to the girl if the pattern of the mirror frame catches his eye. The mirror frame diverts his interest when it should be directed at the girl. In this case, the frame is cropped down and the girl gets all the attention.

Layout fundamentals

Thumbnails show how both formal and informal layouts can be enhanced by the artist's understanding of proportion, balance, contrast, rhythm, and unity

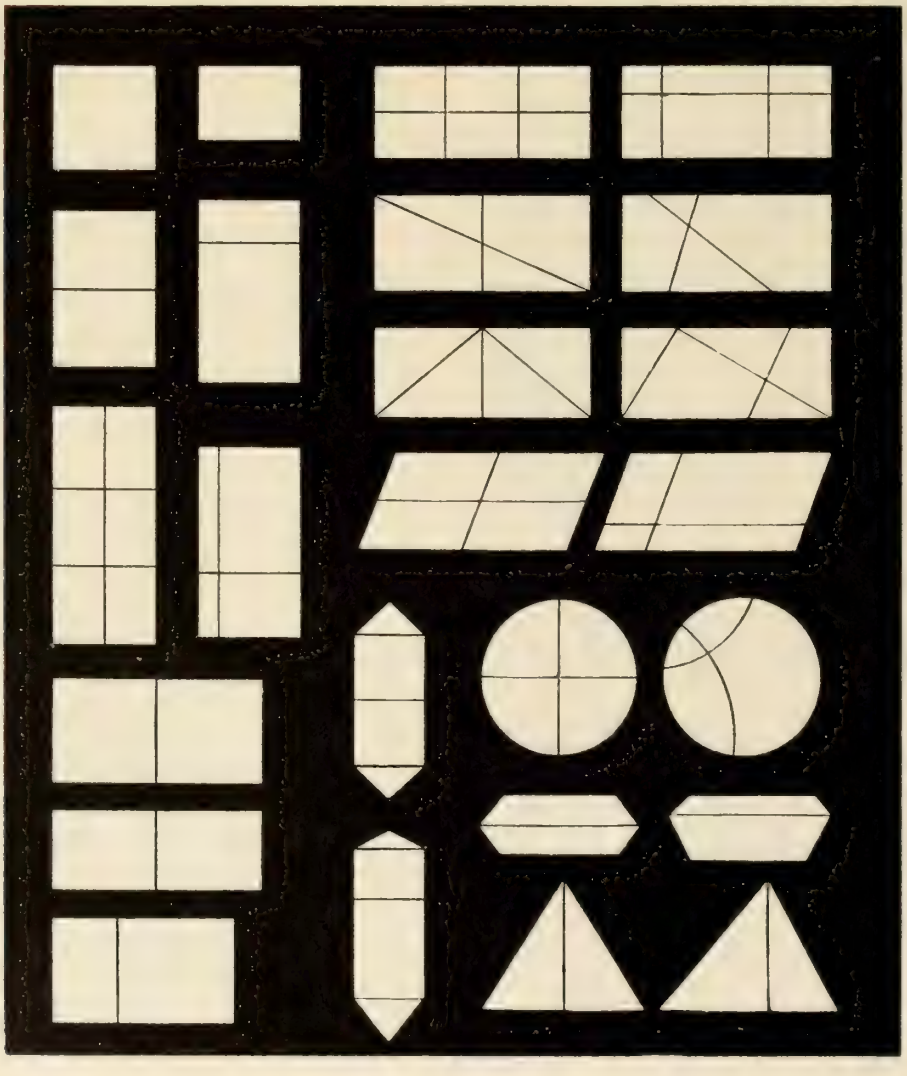
Charles J. Felten

The human eye is the main physical avenue through which all objects are comprehended. Through this means, there are created in the mind impressions, reactions, and desires that are either favorable or unfavorable.

To create favorable reactions, printing must be attractive in design; it should arrest the eye, hold the attention, and impress and stimulate the reader, thereby fulfilling its fundamental purpose as a highly developed art.

Layout is the method of applying design to printing. It is the arrangement of all component parts, such as headlines, subheadings, text masses, illustrations, and signature into a unified, attractive pattern. Layout is used in printing production as is an architect's blueprint in the construction of a building.

There are five basic design requisites for a successful layout, be the layout a thumbnail, sketch, an actual size rough, or an elaborately drawn visual. These five elemental requisites are: proportion, balance, contrast, rhythm, and unity.



How to position a display unit correctly and how to regulate its size, shape, and tone effectively depends upon a sense of correctness and good taste developed by experience rather than by strict adherence to mechanical rules and measurements. With this in mind. the illustration panels that accompany this article are offered, not as hard and fast rules, but as suggestions and visualizations for the reader's consideration.

There are seven panels of illustrations. The first five demonstrate variations in proportion, balance, contrast, rhythm, and unity. The last two show how these elements may be combined to obtain any of the overall effects that may be desired.

Proportion

The attaining of shapes that are interesting to the eye, and the dividing of areas into pleasing, unmonotonous patterns of space are the fundamentals of achieving correct proportion. In the panel to the left are shown paired examples of how static areas and monotonous space divisions may be improved in interest by changes in mathematically obvious dimensions.

The uninteresting square at top left becomes a better proportioned and more pleasing area by reducing its height, as shown at its right.

The next two pairings directly beneath illustrate how areas, and space patterns within areas, may be improved by altering dimensions so that the eye does not readily perceive their mathematical relationship.

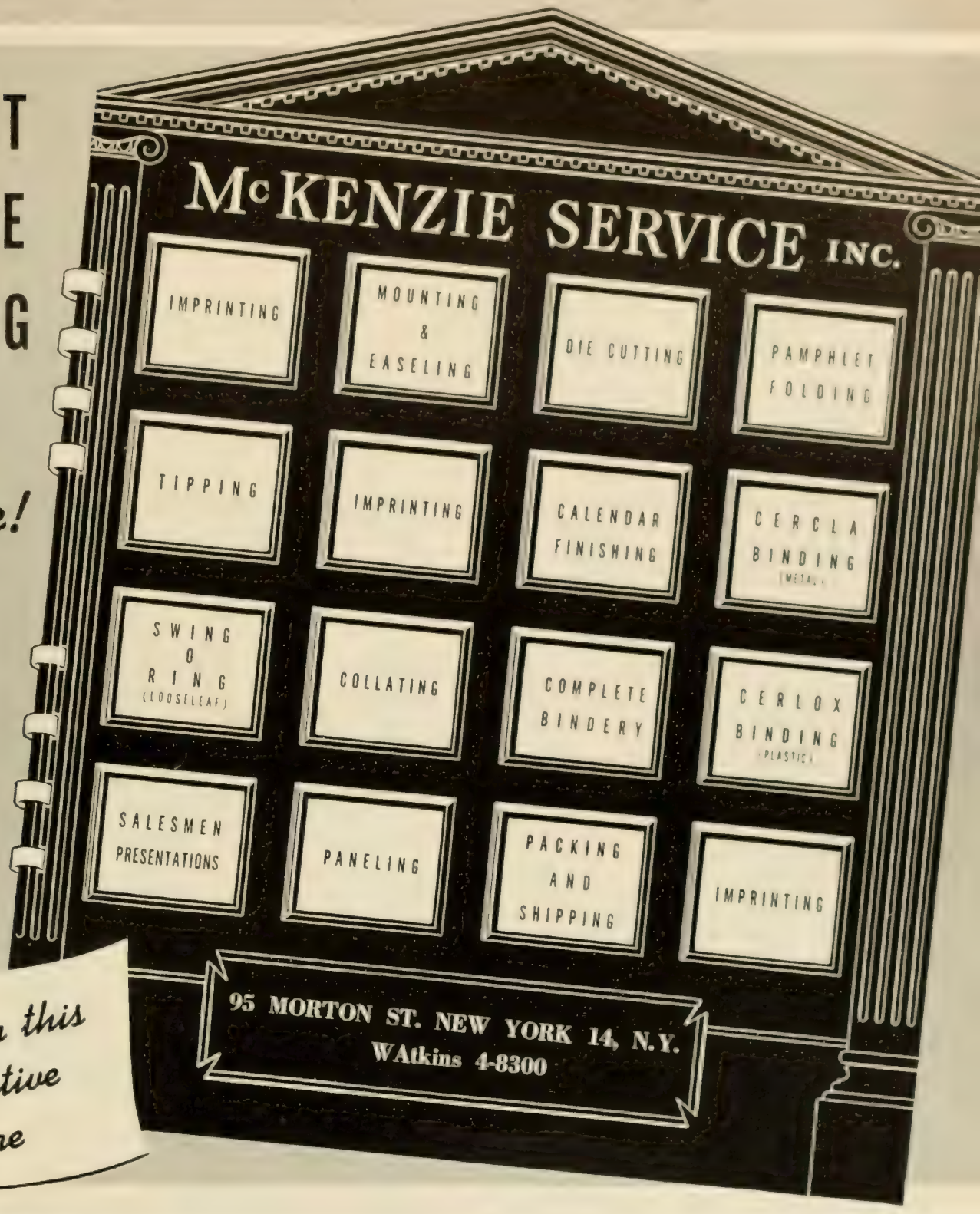
The two patterns at bottom left illustrate two ways of improving the double square directly above them.

At top right, the four pairs of groupings show basic examples of how proportion is improved in horizontal patterns by the proper rectangular and diagonal divisions.

The four groupings at lower right illustrate how angular and circular areas may be proportioned and divided in a more interesting, eye-catching way.

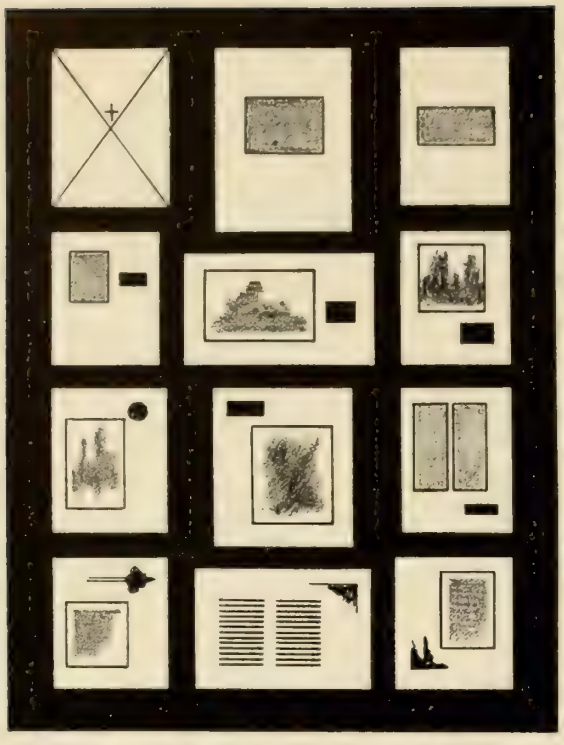
The full at-a-glance story of

The MOST COMPLETE FINISHING PLANT *anywhere!*



Send for this informative brochure

A VISIT TO OUR PLANT WILL CONVINCE YOU THAT WE CAN DELIVER. NO JOB TOO LARGE!



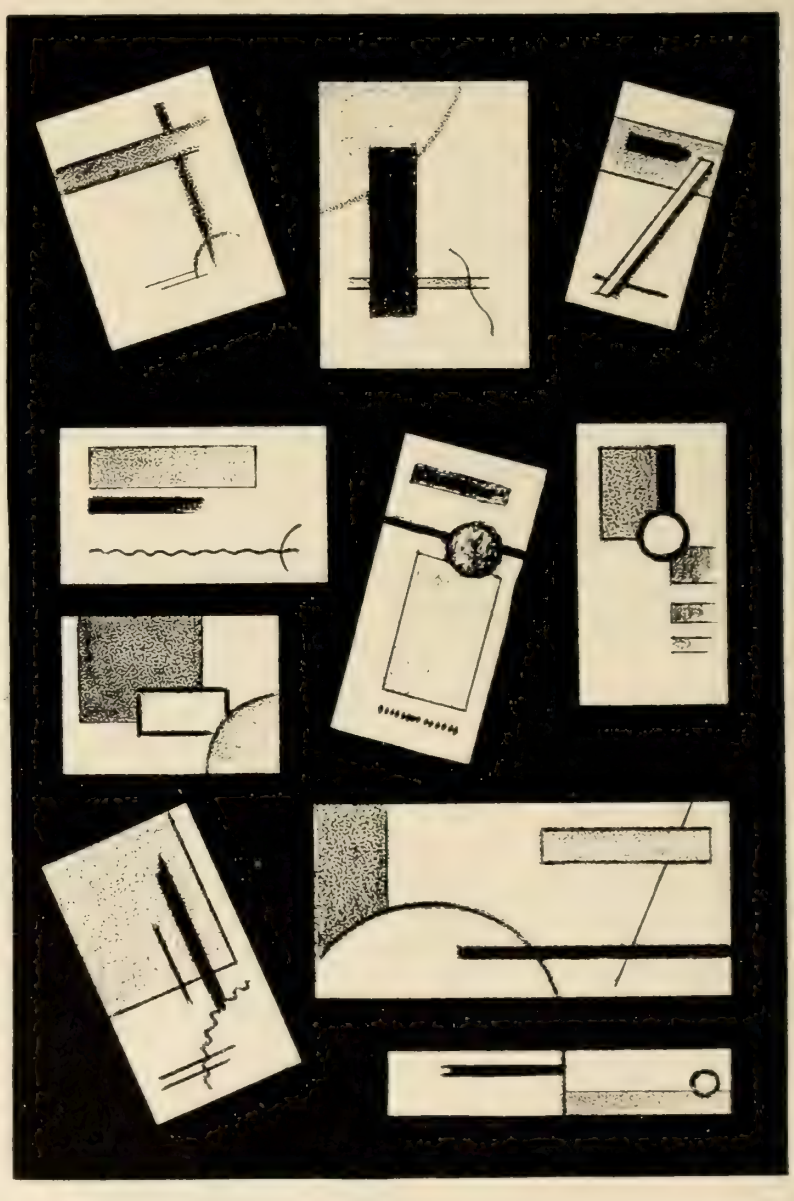
Balance

The three top examples in the panel at the left illustrate the optical illusion created by placing an element in the mathematical center of an area. It will seem low and unbalanced vertically.

The X in the first example shows the approximate position of optical center, somewhat above mathematical center. The next illustration places an element approximately in the optical center. The third demonstrates that an element in exact center appears too low. The other sketches illustrate the principle that when elements are unequal in size, optical balance must be maintained by regulating shape, tone, and position of elements in relation to the optical center.

Circular shapes exert more weight than do similarly toned rectangular shapes of comparable size. Irregularly shaped objects attract the eye more than either, and must be skillfully placed to achieve optical balance. Proper distribution of white space also helps maintain balance.

There are no rigid rules or mathematical calculations for attaining correct balance. Rather, a sense of correctness must be cultivated by experiment and development of sound judgment as to when elements in a layout pattern are optically balanced to provide the most pleasing effect possible.



Contrast

The top three examples at the right illustrate how contrast in direction may be achieved by placing horizontal, vertical, circular, diagonal, and irregularly shaped elements so that the movement of the eye is influenced by the directional shape of the element being utilized in the design.

The first example illustrates the natural movement of the eye to the right caused by a horizontal shape, then the downward vertical movement, into the circular form, thence to the left horizontal lines.

In the second example, the semicircular form is a focal point from which the eye gravitates downward vertically, then finally to the right and into the irregular form.

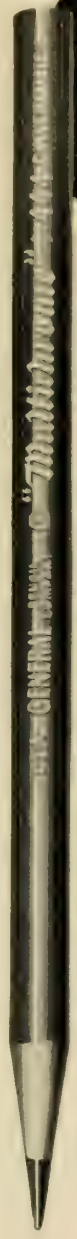
The third example follows naturally from left to right, then diagonally downward to lower left, and horizontally to the right.

The remaining examples in this panel show how contrast is emphasized by regulating the size, shape, and tone of elements.

These basic sketches are purposely drawn in an overemphasized style, to illustrate some of the unlimited possibilities for attaining contrast. The various elements shown may be visualized as vague interpretations of illustrations, type headings, text masses, panels, decorative units, logotypes, and other units in a layout pattern.

Contrasting elements in an advertisement can be used to permit the reader to absorb a message piece by piece. When judiciously balanced in an ad that has proper rhythm and unity, contrasting elements impel the reader to the units of the ad in their correct sequence. Size, shape, and color affect the contrast among the many elements of an advertisement.

GENERAL'S
Drawing Pencils



MULTICHROME
COLORED DRAWING PENCILS
50 BRILLIANT COLORS

Turn to page 259 in the printing section of this book for the complete Multichrome Color Chart.



PENCILS
CORRECTLY SUITED TO EVERY DRAWING PURPOSE

Smooth, strong, uniform and accurate in each degree, GENERAL'S Pencils are dependable for maximum production efficiency. The satisfying results easily obtained are visual evidence of their "Built-in-Quality."

The drawing pencils illustrated in panel are listed below in corresponding order.

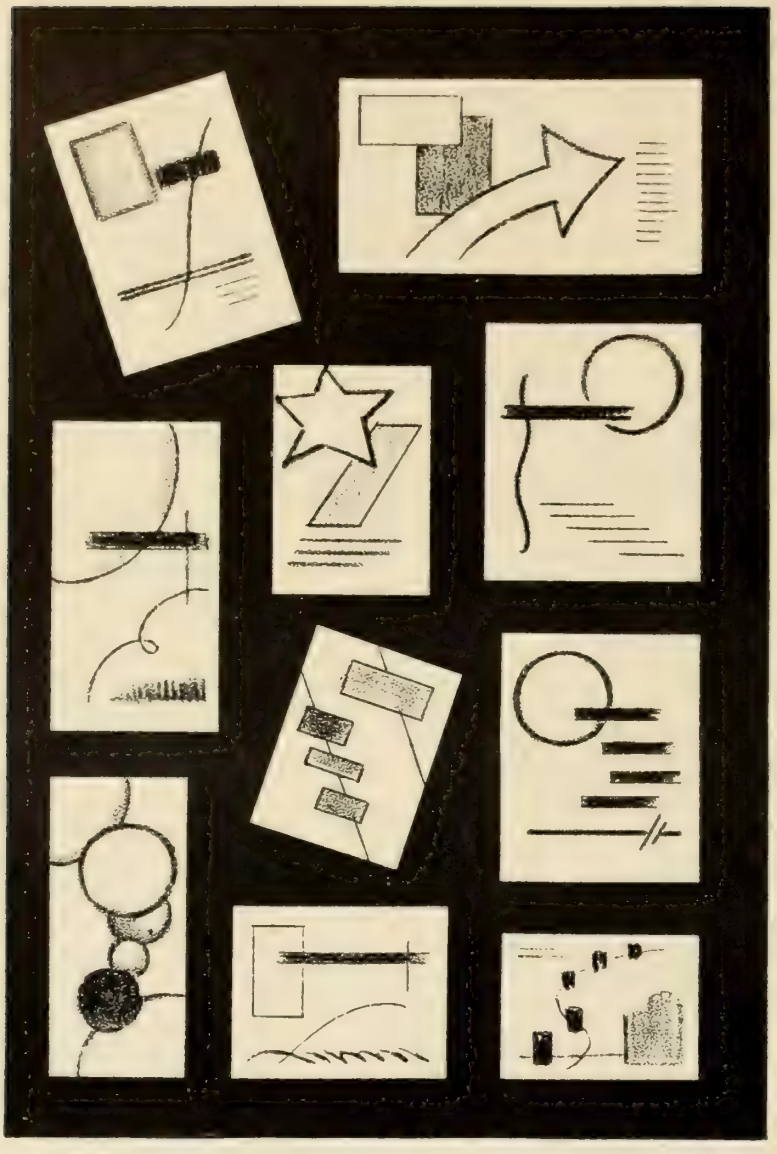
KIMBERLY DRAWING PENCILS
22 accurate degrees, 6B-9H
Tracing 1-2-3-4 and
KIMBERLY EXTRA B
Intense Black Layout Pencil
GENERAL'S CARBON BLACK DRAWING PENCIL
5 degrees, H-HB-B-BB-BBB
GENERAL'S CHARCOAL PENCIL
3 degrees, 2B-4B-6B
GENERAL'S FLAT SKETCHING PENCIL
3 degrees, 2B-4B-6B
KIMBERLY GRAPHITE STICKS
3" long—rectangular ¼" x ½"
Square ¼" x ¼"—3 degrees, 2B-4B-6B

Makers of Fine Pencils since 1889

GENERAL'S CHINA MARKING PENCIL
ESPECIALLY USEFUL FOR PRODUCTION WORK

Writes easily, clearly on all smooth and glossy surfaces including metal . . . photographs . . . cellophane . . . china . . . glass . . . etc. Made in Black, White, Yellow, Brown, Blue, Red, Green and Vermillion.

GENERAL PENCIL COMPANY 67-73 FLEET STREET, JERSEY CITY 6, N. J.



Rhythm

Rhythm, or movement, in layout is attained by accelerating the directional flow of the eye to the ultimate objective in the most effortless manner. In the panel illustration at the left, the example at top left emphasizes the function of contrasting shapes and the introduction of a rhythmic touch that connects top and bottom elements with its graceful sweep.

Rhythm in example at top right is emphasized by the swift directional movement of the arrow placed in accentuation to the rectangular horizontal and vertical elements. It carries the eye emphatically to the text at extreme right.

In the other examples, extreme shapes are used to illustrate the emphatic movement exerted by these elements. Movement emanates from a circular form more smoothly than from an element that has a sharply accentuated feature, such as the points of a star. Likewise, diagonals create more movement than do horizontal and vertical shapes.

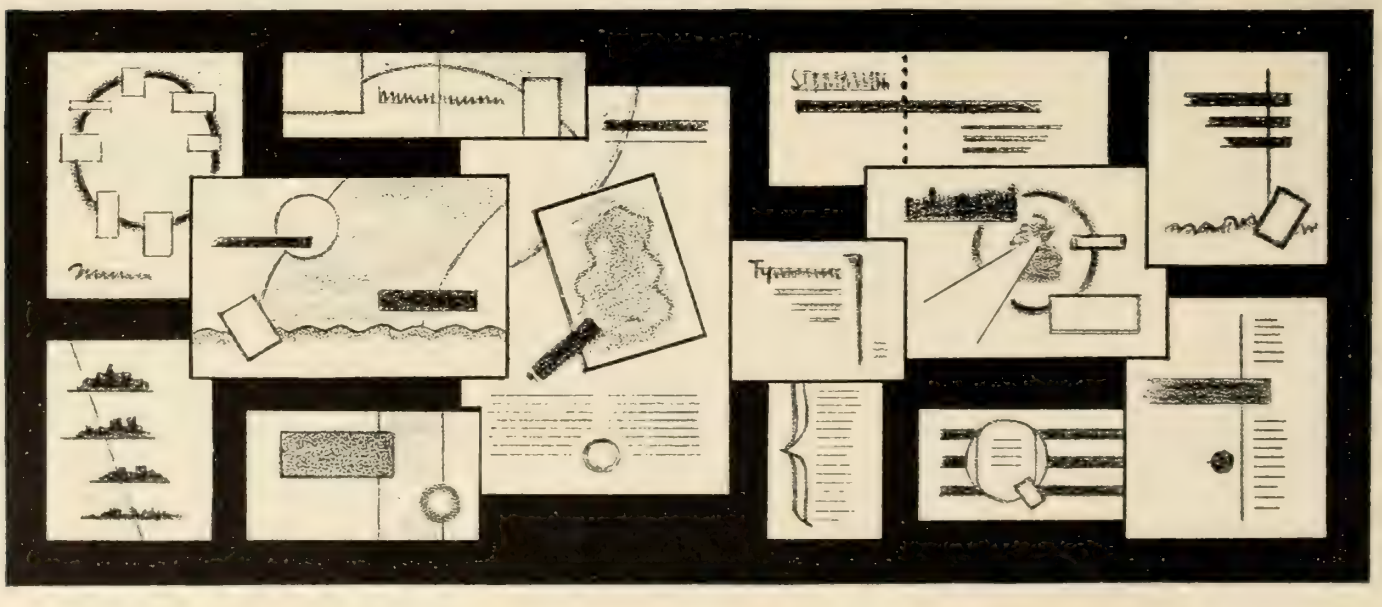
Repetition of similarly shaped elements, such as the circular forms in the lower left example or the display elements in the lower right, creates rhythm when they are placed in an orderly pattern for the eye to follow.

Unity

The basic fundamental for attaining unity is the grouping together of all related elements, thus reducing the number of display elements and generally simplifying the pattern.

In the panel across bottom of page, all the elemental examples are themselves unified by placement together. The examples at left show how related elements may be grouped by means of borders, background panels, and overlapping of elements to attain a closer-knit homogeneous effect.

The examples at right illustrate how unity may be achieved by a simple device such as a rule, initial letter, or bracket that may be used as an axis or focal point for grouping type masses and other elements.



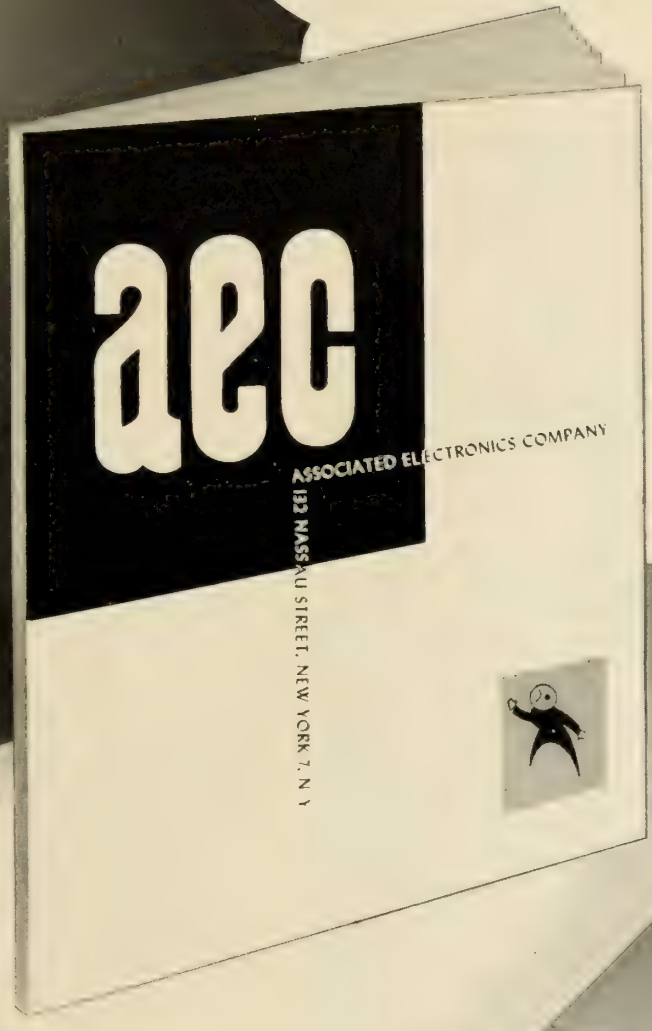
Advertising and Sales Executives . . .

WRITE FOR AEC's NEW BROCHURE ON MODERN ADVERTISING TECHNOLOGY

Let it show you how AEC's Industrial Advertising Department can engineer better sales results as *your* . . . "technical consultants on industrial advertising"

AEC's new 36-page illustrated brochure tells the story of a comprehensive, custom-created technical advertising service that covers every phase of performance involved in preparing and producing effective media for ADVERTISING THAT SELLS!

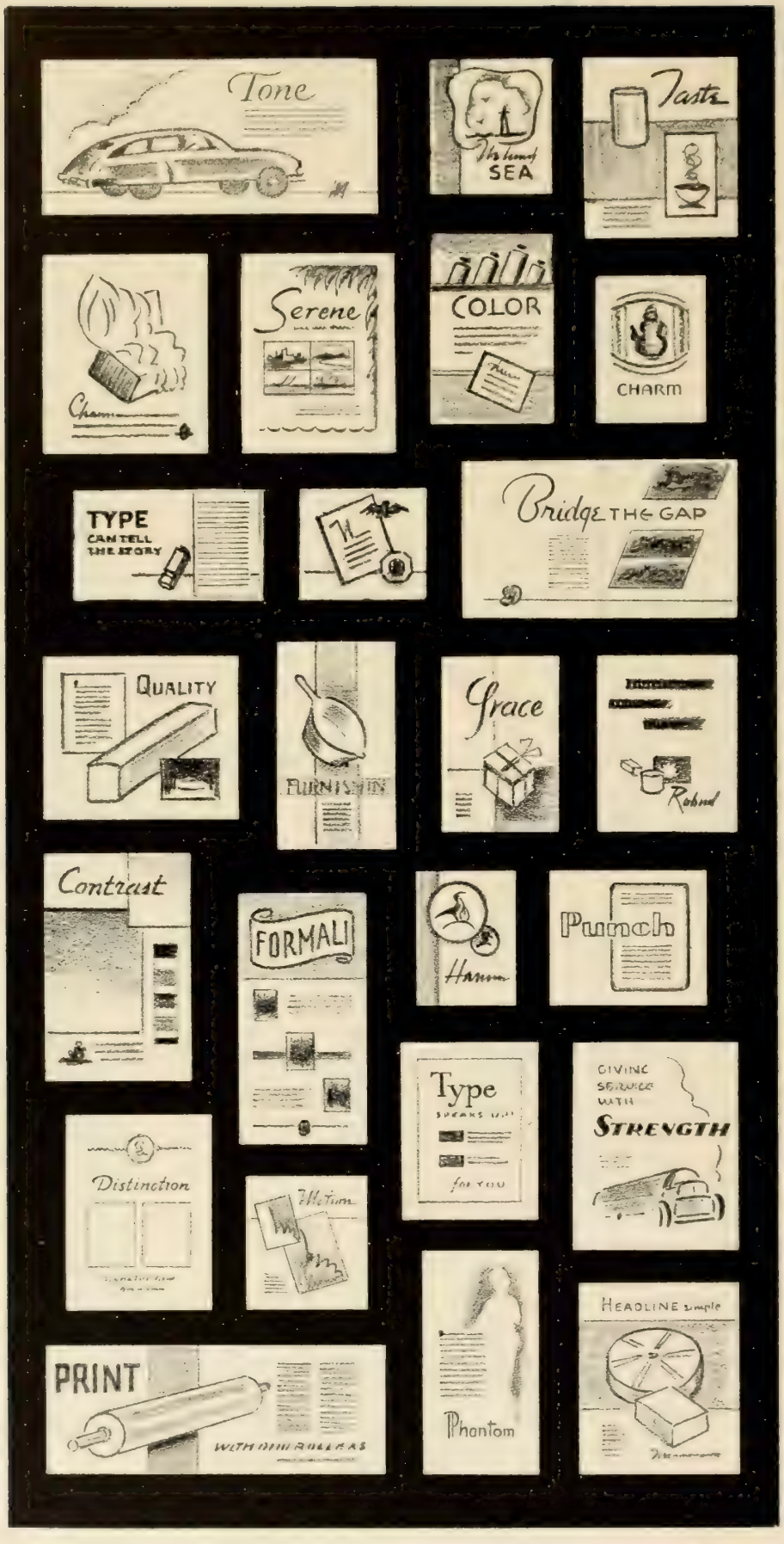
Whatever your product — aeronautical, electronic, mechanical, electrical, chemical, plastic, structural, marine, etc. — AEC's facilities and abilities are available to you. This new brochure shows how this service is SPECIALIZED to suit YOUR NEEDS.



AEC's Industrial Advertising Department does not act as an advertising agency. It does not place ads or sell space but acts as "technical consultants on industrial advertising" working with agencies or through them with their clients, or, where advisable, directly with the manufacturer.

ADVERTISING AND SALES EXECUTIVES . . . you can get this new 36 page illustrated brochure by writing on your company stationery to:

Industrial Advertising Dept. of ASSOCIATED ELECTRONICS COMPANY
132 Nassau Street, New York 7, N. Y. · Beekman 3-3912



Layout styles

Fundamentally, there are but two distinct layout styles—the formal, or symmetrically balanced, and the informal, or nonsymmetrically balanced. The former is based on the traditional design principle of controlling harmonious balance in a centered arrangement. The latter typifies the dynamic principle of maintaining both movement and equilibrium in a noncentered arrangement.

The panels on this and the next page show a cross section of layout patterns adaptable to a great variety of newspaper, magazine, direct mail, and poster advertising.

Informal or assymmetrical layouts predominate in the showing, as this type is more generally used in modern-day advertising because it typifies a faster-moving tempo than does the formal, or symmetrically balanced, style of layout which appears less often today.

Formal layout

The formal style is illustrated on this page in the layouts titled Charm at upper right, and Formali and Distinction at lower left, and, on the next page, Roomy and Men Who Care.

In these small roughs, the principle of balancing all display elements on a central vertical axis is exemplified. Every element must be balanced on this imaginary central vertical line; or, if an element is placed to left or right of this vertical, it must be counterbalanced by a unit of similar size and weight on the opposite side of the vertical.

Design in a formal layout is achieved by correctly accentuating certain display elements, harmoniously contrasting their sizes, shapes, and tones; properly proportioning the widths of display lines, correctly grouping and leading headings and text masses, proper use of margins and white space, effective ornamentation, and proper placing of the composition vertically within the layout area of the advertisement.

Formal layout usually predominates in financial, professional, and institutional advertising; likewise in ecclesiastical, social, and other formal printing that exemplifies reserve and tradition.

The traditional formal style generally is used where reservedness, dignity, and repose is required. Limited movement may be attained by ingenious arrangements that create interest but still maintain balance, as illustrated by the Formali layout of three "stepped" units.

Informal layout

This style of layout embraces the many varieties of off-centered arrangements that depend, to one degree or another, on the momentum of the design to attract attention, invite interest, and activate the reader.

The many types of informal layouts stem basically from lively, interesting space divisions and ingenious, contrasting patterns. Movement may be slow, fast, or of an intermediate tempo, dependent upon the design pattern, the directional shapes of the elements, and their arrangement.

On the preceding page, slow movement in informal arrangement is exemplified in the Tone, Taste, Serene, Contrast, and Punch layouts, and on this page by Flower Show, Fishing, and Pattern. Fast-moving examples on the preceding page are Bridge the Gap, which graphically portrays how action is stimulated by angular cropping and placement of pictures; and the layout to its left, which typifies action achieved by tilting a panel from the orthodox rectangular placement.

The Color, Quality, Print, and other layouts on the preceding page, and the Flavor, Outdoors, and Interiors sketches on this page are stimulated by the directional movement of the products shown. Intermediate action is typified by the layouts titled Sea and Phantom on the preceding page and Comfort, Score, and a number of others on this page.

Formal to informal

A layout that is basically formal in arrangement, but by virtue of informal placement of one or two elements becomes informal in style, is illustrated by the Integrity example at the bottom of this page.

The so-called "modern" layout is an extreme evolvement of informal layout that was developed from geometric design. Its chief characteristics are simplicity of line and movement.

The combination of units and masses into interesting geometric arrangements, the division of white space into forceful contrasting elements, and the elimination of fussy ornamentation are other distinguishing features of this extreme version of the informal layout.

It is further accentuated by the prolific use of sans serif types, bleed illustrations, reverse panels, screen tint backgrounds, and many other of the recently-evolved contemporary design devices.



Photocopy uses

Rapidly produced at low cost, photocopies aid in making layouts, often serve as artwork, and can be used for a variety of special purposes

Ray M. Hogan

Photocopies serve a wide variety of advertising needs. The method of manufacture is a simple one that means low costs and fast service. Anything that can be photographed can be photocopied. Small objects themselves can be photographed direct on the photocopy camera in simple perspective.

Like all advertising copy, photocopies are either line or halftone reproductions. Line copy includes pen drawings, text matter, rules, decorations, etc. Halftone copy includes photographs, wash drawings, pencil, pastel and crayon drawings, as well as direct-from-the-object subjects.

Although excellent photocopies, which can be ordered in same or reversed position, are obtainable from halftone copy, these prints are not generally used for reproduction in photo-engravings or offset plates. However, line copy photocopies are used for reproduction and can be ordered in reverse color and in reverse position, if desired.

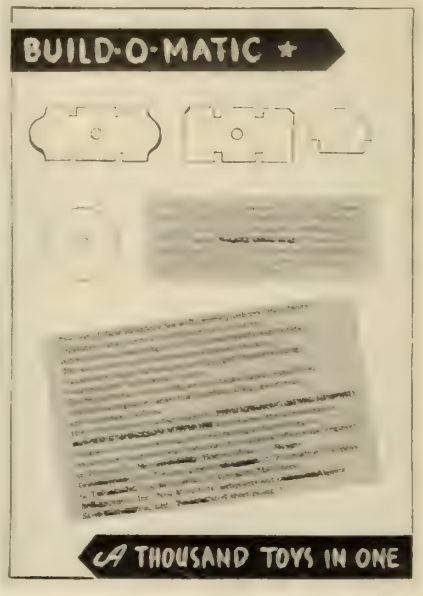
Photocopies for advertising purposes fall into two classifications: for dummies and page designs of material to be reproduced in letterpress or offset printing, and for reproduction copy in either lithographic or letterpress printing.

Making dummies

To take a typical example of the use of photocopies for dummies, suppose there was a request to furnish several dummies, for approval by various persons, of a 16-page booklet in which some 30 photographic illustrations in various sizes were to be reproduced.

Of course, an artist could rough up the required number of complete dummies, sketching in the photographs to correct size, but this would require a great deal of art time and might be too costly.

The simple, inexpensive thing to do would be to order photocopies in correct sizes from the photographs and assemble one complete dummy, mounting in the typeset or typewritten copy. When this dummy was finished, it could be taken apart and two or more complete pages photocopied at one time in the required number to make up the requested dummies. These photocopies then would be assembled into finished dummies to be sent out for approval.



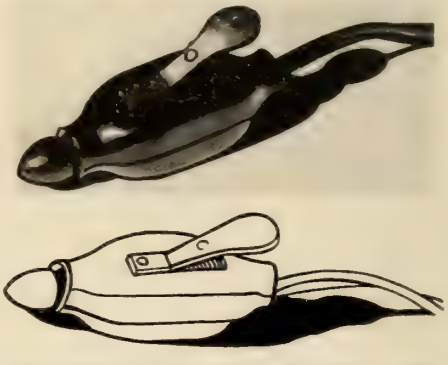
Work drawings: This is for a page to be printed in offset where line drawings, reverse color headings, and tilted text matter are first made in photocopies and then mounted with the type-set reproduction proofs of the text matter to make a complete layout of the line copy for the page with all elements in place.

Newspaper and magazine ads on which approvals or comments are required also can be photocopied, which means that the advertiser can send out a facsimile of the finished job, retaining the original.

Where valuable and expensive art creations and photographs must be sent out for approvals, particularly by mail, photocopies will eliminate damage in handling and possible actual loss. Quick approvals of "deadline" advertising material can be obtained by telephone, mail, or wire from photocopies, which allow originals to remain in the agency's hands awaiting final instructions.

Photocopies for use as reproduction copy for the making of photo-engravings and offset plates are generally from line copy (text matter and line drawings) and are always made on glossy stock. They are more widely used for the preparation of copy for offset than for photo-engravings (zinc etchings), and save time and money in offset, where a complete working drawing for each page to be reproduced must be furnished.

Photocopies from line copy (drawings, text matter, etc.) can be ordered in any sizes to fit any predetermined areas and mounted down on the working drawing, thereby becoming part of the finished line copy. This avoids the cost of extra negatives to be stripped in. The artist can then check a facsimile of each page as it will appear in the finished printing.



Top: Photostat from photograph inked in and ready for bleaching. Bottom, resultant line drawing made from a bleached out photocopy.

Many advertising jobs call for conversion of photographs into line drawings, particularly where they must print on paper stocks that will not accept halftones satisfactorily. Companies doing business with jobbers and distributors who publish their own catalogs often are called upon to furnish many "cuts" for this purpose. In such cases, zinc etchings made from line drawings cost less than halftones made from photographic prints of the subject.

Many hands make RIGHT work!



THE MANY skilled hands at Russo Studios, all functioning under one roof, are thoroughly trained to do a specialized job. For instance, our *photostatic* departments are represented by men who handle no other branch of work but photostatic reproduction. The same holds true of our complete *photographic* departments. Our studios for *original illustration* are devoted exclusively to that province. Each man is a creative artist with a distinctive technique in a designated sphere.

Russo Studios, plants and shops have the hands, minds and equipment to give you the *best* . . . artistically and commercially. That's why you're *right* when you come to Russo . . . for *quality* and *service*.

F. A. RUSSO INC.

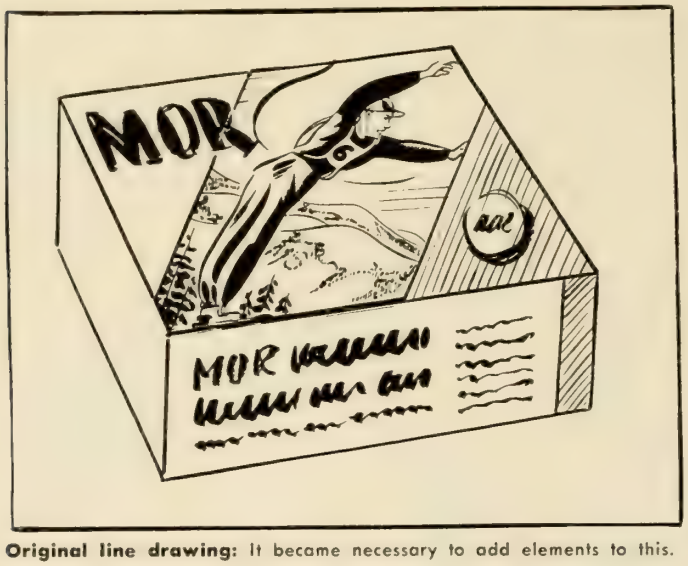
480 LEXINGTON AVENUE • PLAZA 5-4700



Photocopy: Black-and-white print made from Kodachrome transparency.



Line drawing: Made from photocopy at left by the bleach-out method.



Original line drawing: It became necessary to add elements to this.



Revised drawing: Photocopy was employed to add caption and arrow.

When the job calls for converting a photograph into a line drawing, all that need be done is to order a "matté photocopy for bleaching" and have the artist ink in the picture directly on the photocopy, using black India ink. When the work is completed, it is sent to the photocopy plant with the instructions, "bleach out," as is described below.

Bleaching out

The bleaching process, using a solution of lye and water, removes everything from the print except the inked-in parts. The result is a facsimile pen drawing of the photograph. After some simple touching up with ink and Chinese white, the copy can be used for reproduction.

Accurate, facsimile drawings for photo-engravings or offset copy can easily be made through a method known as the "silver-print" or "bleach-out" process. The procedure is a simple one that any pen-and-ink artist can do, and the finished line drawing is a true interpretation of the photograph.

A print called a "Van Dyke" or "silver-print" by photo-engravers and a "matté photocopy" by photocopy plants is made, generally in a larger size, from the photograph. The artist then inks in the subject directly on this print, using black India ink and in a technique of line and solids that he believes will give the best effect. Best results are obtained when firm, clean lines and solid black areas for shadow are used.

After the inking-in, the print is returned to the photo-engraver or photocopy plant for bleaching in lye and water to remove everything except the inked-in portion. The result is a line drawing of the original photograph.

Kodachromes are being widely used today for advertising illustrations, and some photocopy plants have developed a method of making black-and-white copies from regular Kodachrome negatives that in many instances are suitable for reproduction. Regular Kodachrome negatives can be enlarged up to four times by this process. If conversion into line drawings is required, it can be accomplished by the "bleach-out" method as illustrated above.

Where a job calls for alterations, additions, or corrections to a line drawing, a photocopy can be ordered from the original, and the additional art work done on it. This means that the original drawing need not be changed.

Photocopies can be used for preparing short-run presentations and sales portfolios that can be assembled in binders. If colors are required, matté photocopies that will take show card colors or oils should be used.

THE GARRAWAY COMPANY

Rutherford, New Jersey

25 Minutes From 42nd Street, New York

PHOTOGRAPHS

Quality — *Quantity*

The Garraway Company organized in 1907 to produce photographs in quantities, developed equipment and automatic machines that with constant modernization lead the industry in QUANTITY and QUALITY production of photographs at prices that make them available for general distribution.

Experience is an Asset

PHOTOGRAPHS

Any size or quantity. Contact prints from the smallest up to 24x30.

TIP-ONS

Miniature photographs with gummed back to illustrate sales letters, bulletins, special offers, booklets, folders and hundreds of other things . . . they command attention and will help to sell anything from lingerie to locomotives.

POST CARD *or* LETTER ENCLOSURE

size photographs are used extensively for the introduction of new models or products, for distribution at conventions, exhibitions, as a card file catalog system, salesmen's advance cards, etc.

PHOTOGRAPHIC BLOTTERS

Everybody uses blotters, *but*—only the most attractive blotter will rate space on the busy executive desk. A photographic blotter has a long and productive life and with a highly glossed surface is a keen competitor of the celluloid type . . . safe and more economical.

ENLARGEMENTS

For use in sales rooms, at conventions, and exhibitions, and as lobby and window displays.

PHOTO MURALS

Interesting wall decoration for offices and sales rooms. We are equipped to make enlargements in one piece up to 40" x 120" and there is no limit to the size that may be made in sections.

PHOTOGRAPHIC WINDOW AND COUNTER DISPLAYS

—each one an actual photograph with the intense black, pure white and all the intermediate tones that only a real photograph can show. ECONOMICAL to produce . . . expensive printing plates are eliminatetd. VARIETY—Black and white, rich sepia, beveled edges, die cut or framed . . . and any size is practical.

The present widespread vogue in amateur photography gives photographs a tremendous interest to the buying public.

(See The Garraway Company Advertisement in the Binding and Finishing Section, page 411)

Isometric drawing

Distorted perspective technique converts minute details of complicated machinery into drawings on which all dimensions are rendered in the same scale

Myron Jonas

Isometric drawing is the most simple mechanical method of drawing objects accurately in perspective. Up to World War II, isometric drawing had been used for ship piping layouts, simple machine drawing, and some limited architectural purposes.

The earliest mention of isometrics that the writer has been able to unearth to date is in the book "A Practical Treatise On Perspective and Isometric Drawing," published in 1873 and edited by William E. Worthen. The opening sentence begins, "Professor Farish of Cambridge has given the term isometric drawing . . . etc." This indicates that isometric drawing was known and used before 1873, at least in the classroom. The Frank Richards and Fred H. Colvin book, "Practical Perspective," published in 1908, has a fairly complete section on isometrics for machine draftsmen.

World War II brought problems in mass technical training never before encountered. The United States armed forces increased to 13,000,000 men and women, who came from all walks of life —shoe salesmen, bookkeepers, gasoline station attendants, bricklayers, lawyers —most of whom had no mechanical training of any kind and had never seen a blueprint in their lives.

Men had to be trained to understand, operate, service, and repair the thousands of machines and instruments that the armed forces all over the world used to win the war. This included not only familiar machines such as automobiles and tractors, but also such Buck Rogers gadgets as the gyro compass, radar, electronic tracker, etc.

There was no time to send these hundreds of thousands of trainees to school to learn blueprint reading—and since all mechanical training starts with the interpreting of blueprints, some way had to be found to teach in weeks what used to take many months.

So isometric drawing was applied to the making of training manuals. Blueprints were interpreted by artist-draftsmen who converted them into accurate three-dimensional shaded pictures that looked like photographs, and could be understood by anyone.

Isometric drawing was one of the highly important reasons the United States was able to get its wonderful new airplanes, ships, tanks, and guns into production and on the firing line with competent trained personnel so quickly, and in such numbers.

Many applications

Isometric drawing, having proved its value so dramatically during the war, now finds many applications in peace time. In the Graphic Arts, for example:

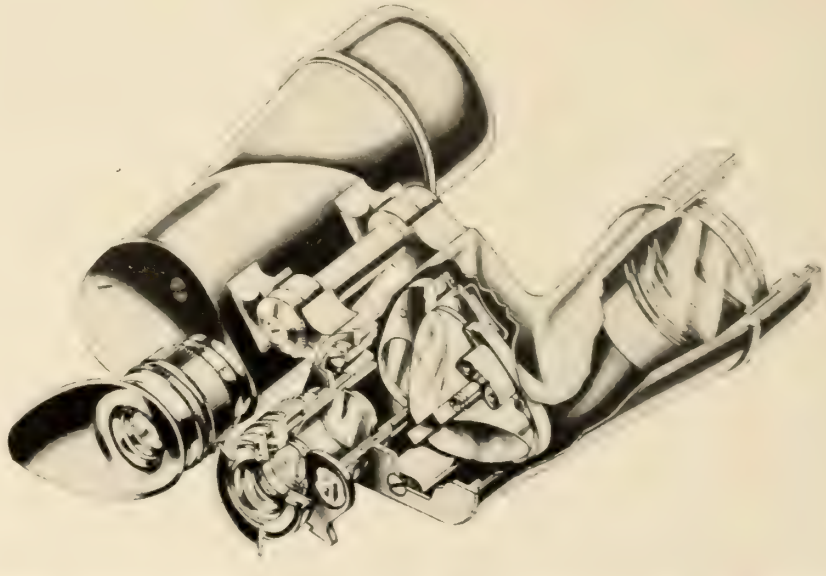
1. Catalogs and instruction manuals for every kind of machinery and equipment require cutaway and other explanatory drawings. These are all quickly and accurately made by isometric drawings. Very often, inner and other parts cannot be photographed, and drawings must be used. Isometric drawings require no cumbersome "projection" and are accurate, measured perspective drawings, strikingly clear and simple.

2. It is possible to make accurate photographic-looking drawings from blueprints of machines that are not yet in production, so that advertising and promotion can be ready long before the machines are on the market. The illustration of the Seal-O-Matic Handi-Sealer was done by the author in this manner from blueprints long before the device was ready for sale.

3. In industrial design, new ideas may be accurately drawn in far less time than it would take to make a perspective drawing by any of the known architectural projection methods. The isometric drawing of the clock design demonstrates the superiority of isometric over orthographic drawing.

4. The same methods may be applied to package design. Compare the isometric drawing of donut package with the orthographic views of the same package.

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Finished isometric cutaway of binoculars shows the completed technique, with both exterior and interior views of the object in the same drawing, greatly aiding visualization of detail.

If your product can best be sold by photographs

but you find the cost of photographs in quantities too great then you should use

VITAPRINTS

"PHOTOGRAPHS IN EVERY WAY BUT COST"

VITAPRINTS are reproductions of photographs with every detail and tone so faithfully reproduced that they are generally accepted as actual photographs. The cost of VITAPRINTS is far less than that of photographs.

Use VITAPRINTS for Direct Mail Enclosures — Blotters — Window and Counter Display Cards — Post Cards — Radio Act Photos — Salesmen's Portfolios — Magazine Inserts. VITAPRINTS are made in either black and white or colors — plain or die-cut — they attract and hold attention.

Chesterfield — Alka-Seltzer — General Mills — Proctor & Gamble — Peruna — Quaker Oats — Pepsodent — Murine — and a host of other radio sponsors have used VITAPRINTS for many years.

Use VITAPRINTS for give-aways — premiums — or as a means of checking radio coverage.

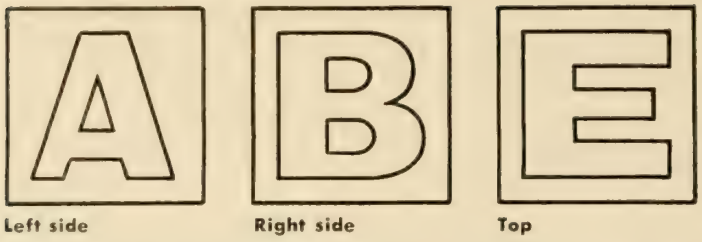
We will be pleased to send samples on request.

THE VITAPRINT PROCESS CORP.

2336 South Wabash Avenue, Chicago 16, Ill.

Isometric drawing, continued:

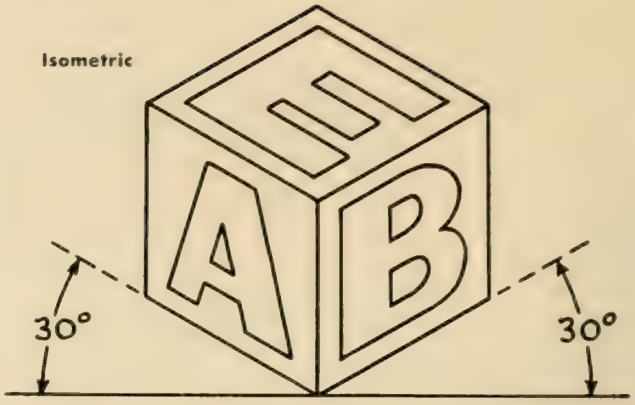
Orthographic



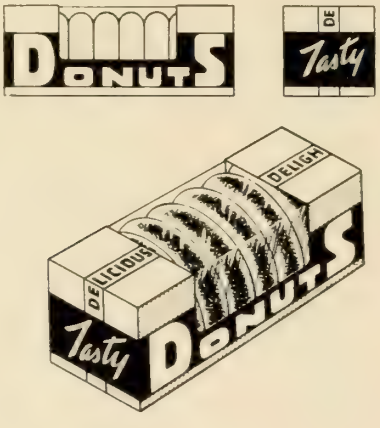
Left side **Right side** **Top**

Above is standard orthographic, or blueprint, way to show accurately three sides of cube. In the isometric method of drawing, however, the entire cube appears as an entity in apparent perspective, as is demonstrated at right.

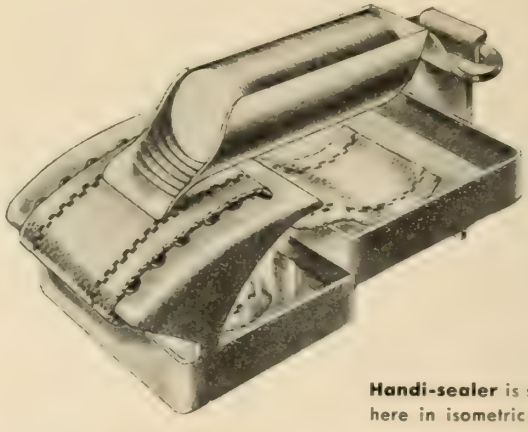
Isometric



Measurements in isometric drawing are exactly the same, or "equal," but the cube is viewed from a corner and the base lines recede at a 30° angle. The only instrument used is a 30°-60° triangle (with the T-square) and all measurements are marked off on the three axes: the vertical forward corner, the base line going to left, and the base line going to the right. All other lines that are parallel to these lines on the object remain parallel in isometric drawing. The main difference between true perspective and isometric is that there is no convergence or "coming together" of parallel lines as they recede from the eye. This does not usually matter except in the case of elongated objects where a slight convergence must be faked to make the drawing optically acceptable, as in the illustration of the donut package. Also shown below are other demonstrations of the isometric technique as well as two examples of comparisons with the standard orthographic technique of drawing.

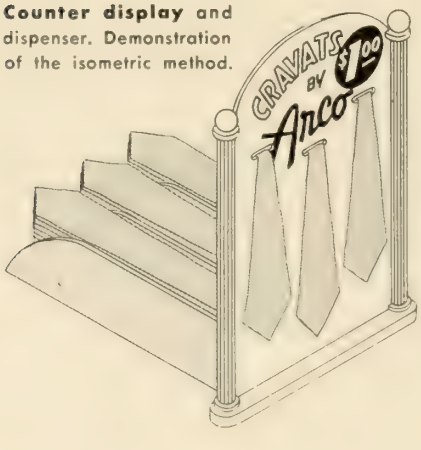


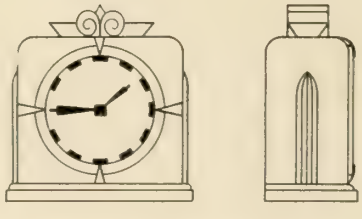
Donut pack, orthographic in top views, isometric in the lower.



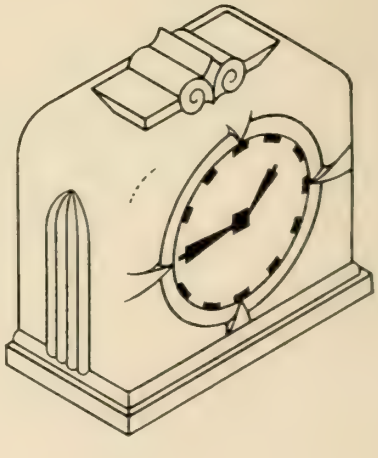
Handi-sealer is shown here in isometric style.

Counter display and dispenser. Demonstration of the isometric method.





Clock design illustrates both the orthographic system, in two views above, and the isometric perspective, in the larger drawing at right.



Copy for newspaper reproduction

To achieve quality reproduction, avoid running tones together, eliminate very fine or close lines, and insist on properly etched originals

Ben Dalgin

To be assured that an advertising illustration for use in newspapers will be so reproduced that the selling appeal and essential details of the merchandise or illustration are of maximum effectiveness, the original art work must be prepared along specific lines, as recommended in this article.

Art work for reproduction cannot be judged in the same manner as museum art work. Also, art work suitable for reproduction in one process or media may not be suitable for another. For newspaper reproduction, the artist should realize that the high printing speed, lack of makeready, the rough surfaced absorbent paper, the nature of the inks, and the number of steps and processes through which the copy must pass necessitate that certain simple rules in preparation of the art be observed.

The illustrations on Page 170 show what happens to the halftone dots of a well printed cut as the engraving passes through various stages of reproduction. Illustration D is a far cry from the clean proof in Illustration A. The relative size and shape of these dots determine the faithfulness of the reproduction of the detail and the tone values of the original art work or photograph.

Copy defects

Generally speaking, the majority of the difficulties in newspaper reproduction of illustrations may be classified in three main groups:

1. Tones running together, thus obliterating detail in reproducing from photographs or wash drawings.
2. Fine black lines or thin white lines filling in, thickening, or becoming lost when reproducing from line drawings.
3. Printing material reproducing unsatisfactorily, even though it has been made from properly prepared art work.

I call these sources of dissatisfaction to advertiser and newspaper "the fatal three." If they are overcome—and they can be, by the cooperation of all concerned in the advertiser's store, agency, and the newspaper plant—most of the troubles that beset the production worker would be ended. They are easily remembered: wash drawings or photographs, line drawings, and printing material. Or even briefer: tone, line, and printing material.

The copy involved in the first of these groups is reproduced by halftone engraving and consists of art work with different tone values. Let me emphasize that art work in which the tone values run together causes more difficulty, and more complaints from advertisers, than any other type of copy. It may look well in its original state. How it reproduces is something else again.

Tone separation

Insufficient tone separation is the chief cause of poor reproduction in which details such as buttons, trimming, pockets, lapels, folds, etc., of a garment are either lost or fail to catch the eye as effectively as in the original. Figures 1 and 2 of the accompanying insert illustrate this point. Figure 1 represents the original art work (which looks well but has insufficient tone separation for newspaper reproduction) and the resultant newspaper illustration. Figure 2 illustrates the art work as it should have been retouched, and as it looked in a newspaper.

The secret of good newspaper printing is violent separation of tone values and avoidance of extreme reductions.

Three tone values best

Contrast should not be obtained by heavying the dark areas of the art but by the elimination of intermediate tones and unnecessary details. The illustration of the gray scales on the accompanying pages indicates how the more subtle tone gradations are lost in newspaper reproduction and result in a muddy merging of tones in the square with five tone values. The square with three tone values has more contrast left.

The same general principles apply to photographs as well as to wash drawings; and illustrations of good and poor art and their resultant newspaper reproductions appear on the accompanying pages.

The chief difficulty with line copy results from the use of too fine lines or lines drawn too closely together. Lines should be opaque black, sharp, and distinct. Same size copy is preferred.

A good rule to remember is that space between black lines of less than 2 points, or white lines finer than 2 points in width, may fill with ink and cause loss of detail and offset upon the newspaper. This recommendation of a minimum of 2 points' space between lines applies to the copy as finally reduced for reproduction. If the copy is large and is to be reduced, line widths must be proportionately larger than 2 points.

Type surprinted on a background is also a reproduction risk. See chart on Pages 470 and 473.

This principle is also illustrated on the accompanying pages. To permit the following illustrations to most nearly represent original art work and screened newspaper reproductions, a four-page photogelatin insert has been prepared In this screenless process, the "art work" is reproduced as nearly as possible as it appears to the eye, and the newspaper reproductions are reprinted just as they appeared in the newspaper.

Material supplied

Not only art work but photo-engravings must be prepared with special care for the best newspaper reproduction. A coarse screen is used. But etching depth, avoidance of heavy tones in screened backgrounds, avoidance of vignettes, and supplying of originals, electros, or plastic plates for copy with fine detail should also be considered. (See Cross-Reference Subject Index for further data regarding these points.)

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Poor copy: Retouched photograph, above, has insufficient tone separation and too little contrast. Resultant newspaper reproduction is illustrated at left. Detail and accents that would sell merchandise illustrated does not print.



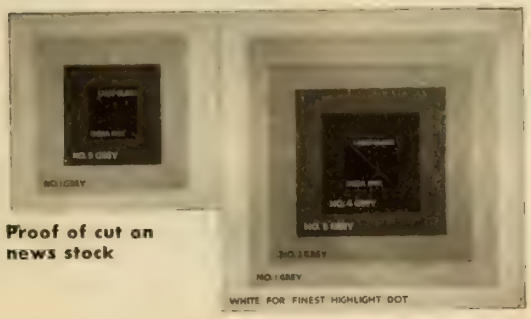
Good copy: Photograph above was properly retouched for newspaper's reproduction. Observe clean, distinct lines and separation of tones. In reproduction at left, vital details that will sell merchandise are more easily noticed.



Original drawing



A graphic representation of what happens when reproducing tone values for newspaper printing



Proof of cut on news stock

Newspapers do not print directly from the cut. A matrix is made of the entire page from which a curved stereotype is cast. The curved plate is then fastened onto the press. These steps tend to lessen contrast still further. To compensate for this, it is recommended that tone copy have fewer tones more widely separated from each other than is customary for magazine reproduction. This principle is illustrated in the squares to the left. The top squares are reproduced directly from the art work, the bottom squares from a proof of a cut pulled on news stock.

For best results, the engraver should be instructed to hold blacks solid and to keep highlights as white as possible. The screen should be dropped out in areas where pure white is desired.

Where the range of tone value is close, as in the larger square, much gradation is lost. Where tones are in marked contrast, they reproduce clearly. Drawings should be made with very strong contrast.

Great reduction in size should be avoided. Actual size drawings facilitate more faithful reproduction. Contrast and detail are lost in reduction; the greater the reduction, the greater the loss. Artists who prefer to draw large size should allow more contrast in their work.

Wherever possible, art work should be prepared in one complete unit. Fine lines should be watched carefully. They must be opaque. They cannot stand much reduction. Where reduction is necessary, the lines must be drawn proportionately thicker. Penciled lines are often lost in photographing or may reproduce too lightly.

Drawing for newspaper reproduction



Original drawing

Proof



Drawing for newspaper reproduction

Proof

This is a careful copy of a drawing submitted for a newspaper advertisement. While the tone values in this drawing seem well defined, details will fill in during the process of newspaper printing. Many features such as pockets, folds, buttons, and belts, will not print clearly. Compare this drawing with the chart on the study of tone values above.



Drawing same size

Proof

In this drawing several tone values were eliminated and sufficient contrast was introduced in order to hold all details during the process of newspaper printing. Proof is clean.

Some artists prefer drawing same size because it eliminates the necessity of judging the changes in tone values and line strength caused by reduction. Reproduction is good.

Selecting the proper photograph

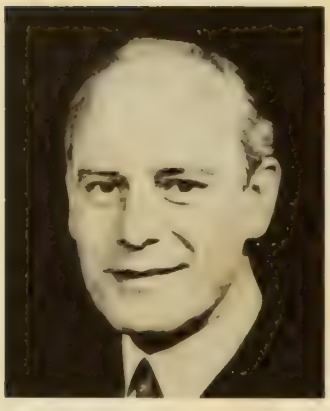
for newspaper reproduction

The ideal newspaper halftone is a reproduction of a photograph which is sparkling in appearance, has solid blacks for accents, highlights as light as possible, and yet holds all middletones. The three large pictures in the accompanying demonstration represent photographic copy. The three small pictures were reproduced from proofs of cuts made from their corresponding photographs.





Print from same negative. Note difference in face. Use just enough retouching to help engraver produce the best halftone possible.





A contrasting print, but character in face was lost. Background and clothes could be retouched but work on face may spoil likeness.





Background has been lightened so that head will stand out. Some other spots, that might break down in engraving, are strengthened.



Copy A, lines drawn too fine



Reproduction from copy A. Lines filled



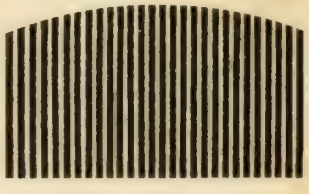
Copy B, widened for good reproduction



Reproduction from copy B. Lines hold in reduction. Details clear



Newspapers prefer this style of illustration



Take note of the white space between the lines in sketch to the left. When white lines reduce to less than 2 points, they may fill in. In reduction, white area loses, black gains, as pictured at right.



Photocopy guide

When and how to use fourteen different kinds of photocopies for layout work, presentations, and to obtain a variety of special effects in art work

Irwin Welcher

Kind	Uses	Remarks
Glossy prints On glossy finish, bromide photographic paper, similar to the glossy paper used by commercial photographers. Provides high contrast, good for sharp copies of line work.	Economical copying of black-and-white originals in line (type proofs, ink drawings, etc.). Negative glossy prints, providing clear white against deep black, for reverse color plates, at saving over direct method. For coarse screen halftone reproductions, order cuts from glossy prints made from semi-matté negatives to increase contrast of black and white and eliminate muddy middle tones.	Not recommended for originals containing values other than black and white.
Regular prints On high contrast, orthochromatic, matté paper, easily folded.	Facsimile copies of layouts, letters, documents. Duplicating "dummies" of booklets, etc., to obtain estimates. Obtaining prints to size for preparing revisions of ads, booklets, broadsides, etc.; obtaining O.K.'s from several sources at once. Copying from original containing color for use in layout. Simultaneously supplying complete, accurate guide to typesetter, artist, engraver, newspaper, printer. Direct-from-object photoprints to be used instead of silverprints for making line drawings.	Not recommended for: Copies of line work to be used again for reproduction. Copies of photographs or original art in wash or similar tone values. Comprehensive layouts, salesmen's portfolios, presentations, or in other ways where a fine quality finished appearance is essential.
Semi-matté prints On semi-matté finish bromide paper, like that used in photo enlargements. This paper is "color blind;" i.e., it will not separate all colors into tones of gray, black, and white.	For copies of photographs, wash drawings, pencil sketches, and other originals containing tone values. For salesmen's portfolios and presentations. Where a number of small halftones are to be used, order semi-matté prints of the photos reduced to size, paste prints in position, retouch slightly, and order one cut from this "flat."	Not recommended for: Copies of line work to be used again for reproduction. Negative copies from originals in color. Booklets, etc., that are to be folded (paper will crack).
Special prints **Bas-relief or shadow**	Produces relief, intaglio, "neon," and a variety of other shadow effects from black-and-white type proofs or art work.	Used for advertising logotypes, trade-marks, or for unusual headline effects.
Color corrected	To prevent certain colored grounds in back of black lettering or other design from photographing as black.	Can be separated in terms of intermediate grays or dropped entirely to furnish clear black-and-white copy.
Color toned	Chemically toned in any one of six monotone colors.	Colors are: sepia, roto-brown, yellow, copper, red, blue, and green.
Curved	Made from straight lines of type, or borders, or lettering, by a photo and mechanical process.	Type, border, or lettering is curved to fit any size or portion of circular arc.
Giant	Available regularly in widths of 20", 30", and 40", and in lengths from 30" up to 80" for displays, demonstrations, etc.	Prints larger than 40"x80" available on special order or specification.
Object perspective	Made from small objects, posed in position to give view of one, two, or three dimensions as required.	Can be applied to type areas, for paste-in on perspective drawings of carton labels, etc.
Reverse	Negative glossy prints for transforming black on white to white on black, or vice versa.	Often easier or cheaper than to prepare original art work in reverse.
Reverse position	Provides complete borders or other designs from as little as one-fourth of the finished art.	Also useful for visualizing appearance of layouts where the picture is to be "flopped" from left to right, or vice versa.
Screened	Adds Ben Day or similar effects or patterns in screen backgrounds to the original subject.	Uses line or type subjects. If not too fine a screen is used, line cut can be made.
Photocopy montage	Relatively inexpensive method of obtaining photomontage effects.	Often results in saving over the photographic method. Saves cost of airbrushing paste-up.
Stretched	Prints are expanded or reduced in one or both directions, disproportionately.	Will cause noticeable distortion if expansion is too great.
Superimposed or surprinted	Lettering can be surprinted, in position, over photos, or art work. Fabric designs, plaster, wood grain, other "background" materials can be photoprinted and type or art superimposed.	Either white or black letters can be produced, and registration is quite accurate. Can be used to show exact position for type strip-ins.

Art techniques

Almost 100 effects produced from a single subject demonstrate the variety of art media, photographic and photo-engraving treatments

Clarence P. Hornung

Infinite are the potential treatments and renderings of a given picture or photograph. This is strikingly borne out by the illustrations that follow on this and subsequent pages. From a single subject, almost a hundred art techniques and engraving treatments have been evolved for this demonstration.

The subject for this study was a photograph taken by Gustav Anderson, and was released by Ewing Galloway.

Other credits for special cooperation with the writer on specific effects are:

Figures 91, 93, 94, 95, and 96, "Edy" Umansky; Figures 9, 10, 31, 43, 44, and 49, Albert Bourges; Figures 17, 18, 23, 69, 70, and 81, Martin J. Weber; and Figures 30, 45, 46, and 47, American Blueprint Company.

For the convenience of PRODUCTION YEARBOOK users, we have prepared the following index to the art data and engraving styles demonstrated. Numbers are those of the illustrations, not pages.

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Figure 1: Original photograph was taken by Gustav Anderson. Engraving: Reproduced here as a straight halftone. (133-line screen)



Figure 2: Special screen (Grafa-Tone, 100-line) is used to create novel pattern and tone effects. This screen also is available in 65-line.



Figure 3: Original photograph. Engraving: A straight halftone, squared up with a black-and-white border finishing line (150-line screen).



Figure 4: Original photograph. Engraving: This is a straight halftone squared up with a black hairline border finish (110-line screen).



Figure 5: Original photograph. Engraving: A regular halftone, very coarse screen squared with no border finishing line (50-line screen).



Figure 6: Reversed left to right when stripping negative. Whites are painted out on print of the halftone negative. Engraving: Copper line.





Figures 7 and 8: Spectroflex process. Original print is stretched in one dimension only. Note that both these pictures are of the same width, and of identical copy, not cropped, but of different height and proportions.



Figure 9: Shading film (Bourges) with a white grain pattern applied over the photo to give a snowstorm effect. Engraving: Ordinary halftone.



Figure 10: Shading film with wood-engraved grain effect. The sheet is applied directly over the photo. Engraving: A straight halftone is used.



Figure 11: Combination plate: Original photo and scratchy pen-and-ink sketch (see Figure 48). Engraving: 120-screen for halftone area. Copper.



Figure 12: Combination plate: Original photo and modern broad-point pen (see Figure 33). Engraving: 120-screen for halftone area. Copper plate.



Figure 13: Halftone enlarged, 17-screen. Made by an enlargement from small halftone negative. Whites are painted out. Engraving: Zinc line.

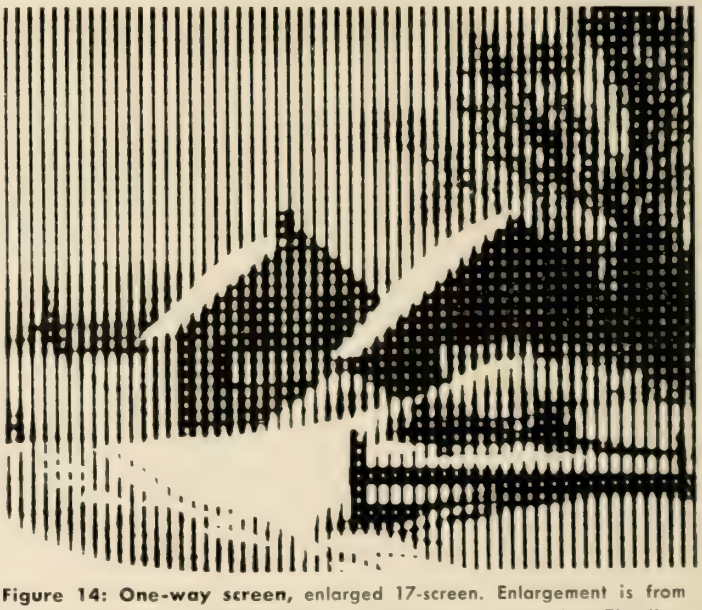


Figure 14: One-way screen, enlarged 17-screen. Enlargement is from a one-way halftone negative. Whites are painted out. Engraving: Zinc line.



Figure 15: Special screen (Grafa-Tone, 65-line) is used to achieve special pattern and tone effects. Engraving: Reproduced by use of Grafa-Tone.



Figure 16: Scratchboard drawing made on a Photo-Ross Board. White highlights are scratched out. Engraving: Highlight halftone on copper.



Figure 17: Relief effect in tones that are photographically produced directly from original photo. Engraving: Halftone copper plate is used.



Figure 18: Relief effect in monotone is photographically produced directly from the original photo. Engraving: Halftone reproduction, copper.



Figure 19: Wash drawing on illustration board made over a pen-and-ink outline of Figure 26. Engraving: Highlight halftone, copper plate.



Figure 20: Ben Day shading medium added to Figure 26 to simulate a wash drawing of Figure 19. Engraving: Ben Day line engraving on zinc.



Figure 21: Wash drawing on an illustration board, made with varying tones of lamp black. Engraving: Regular halftone used, copper plate.



Figure 22: Wash drawing using various milky wash tones on black paper. Engraving: This is an ordinary halftone engraving, copper plate.



Figure 23: **Relief effect** is obtained by a special process, photographed from the drawing in Figure 22. Engraving: Straight halftone, copper.

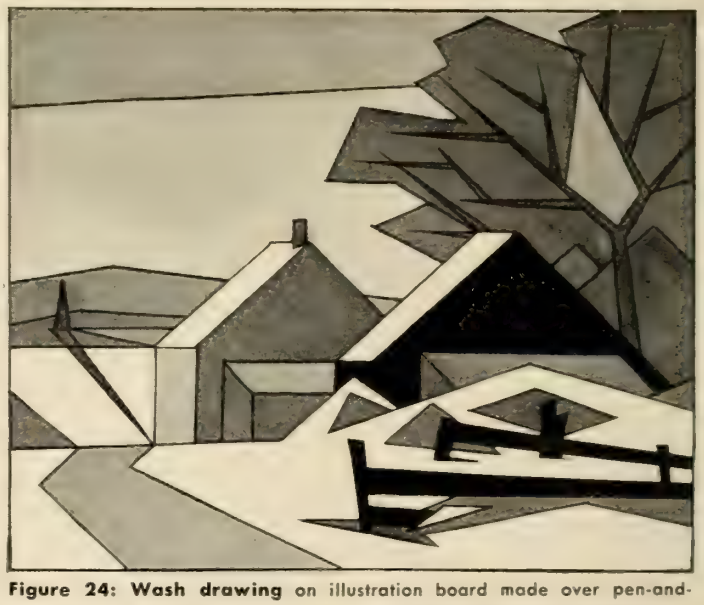


Figure 24: Wash drawing on illustration board made over pen-and-ink outline. Engraving: Halftone with the highest highlights dropped out.

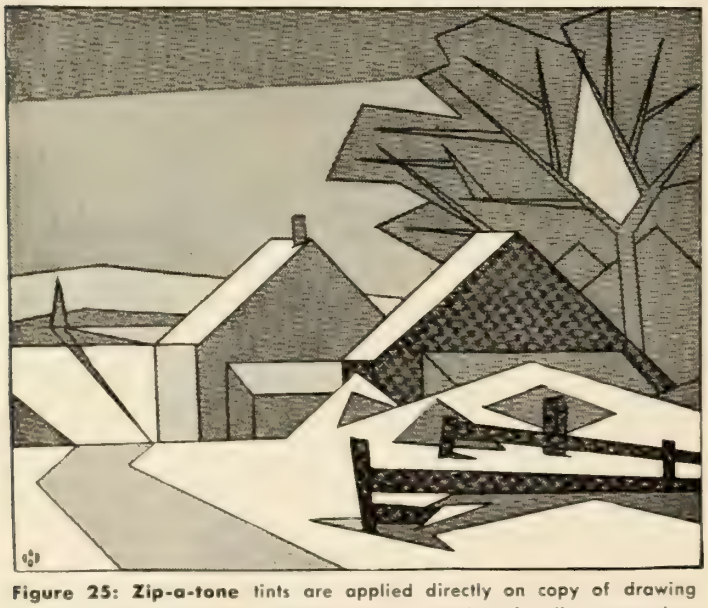


Figure 25: Zip-a-tone tints are applied directly on copy of drawing made in line. Engraving: Reproduced by regular zinc line engraving.

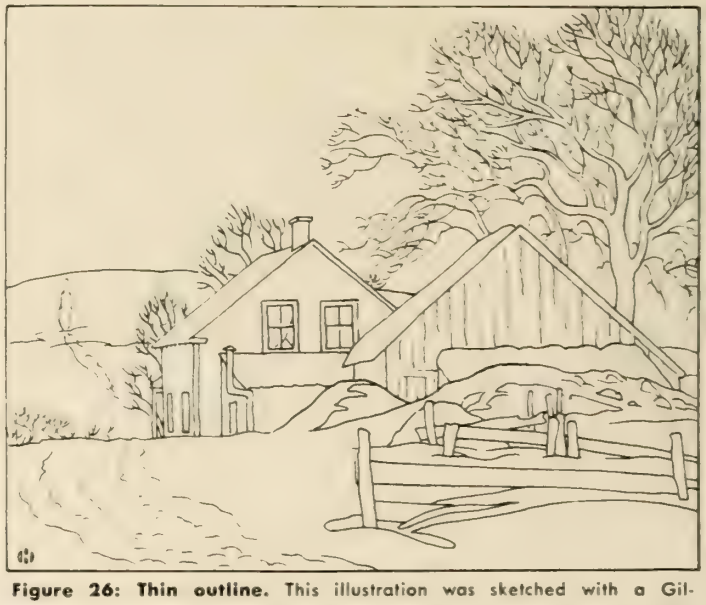


Figure 26: Thin outline. This illustration was sketched with a Gillott pen on a bristol board. Engraving: Regular line engraving on zinc.



Figure 27: Thin white outline obtained directly by the engraver from a negative of Figure 26. Engraving: Line engraving on zinc plate.



Figure 28: Thin white outline from positive of Figure 26. The grayed effect was obtained by stripping the halftone tint on the positive.

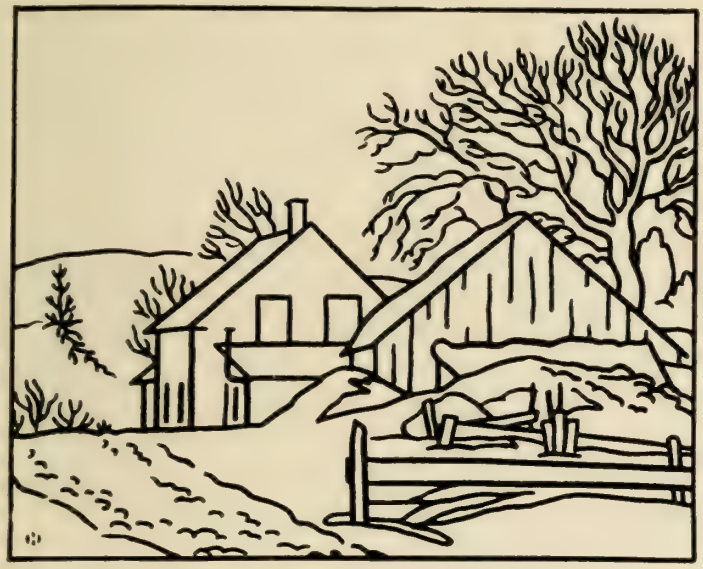


Figure 29: Heavy outline drawing made with a Speedball pen on standard bristol board. Engraving: A regular line engraving on zinc plate.



Figure 30: Plastik print photographically produced by a Photostat from Figure 29. Engraving: This is a straight halftone copper plate.

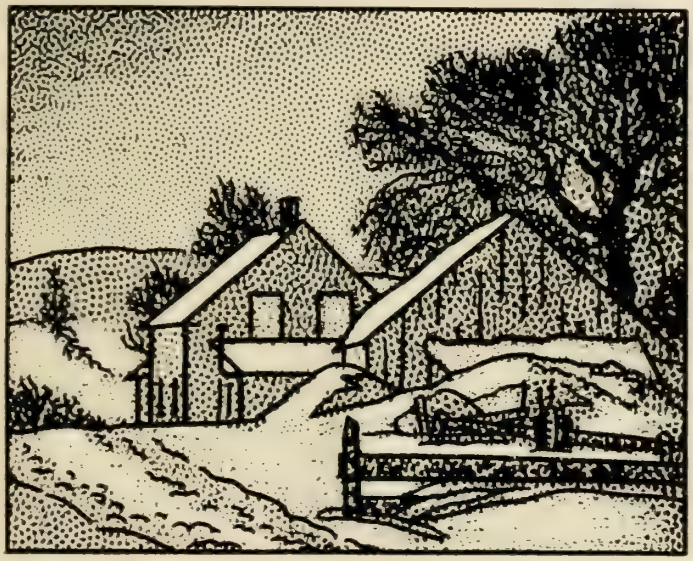


Figure 31: Shading film (Bourges) containing a dot stipple is applied directly over Figure 29. Engraving: Regular line on a zinc plate.

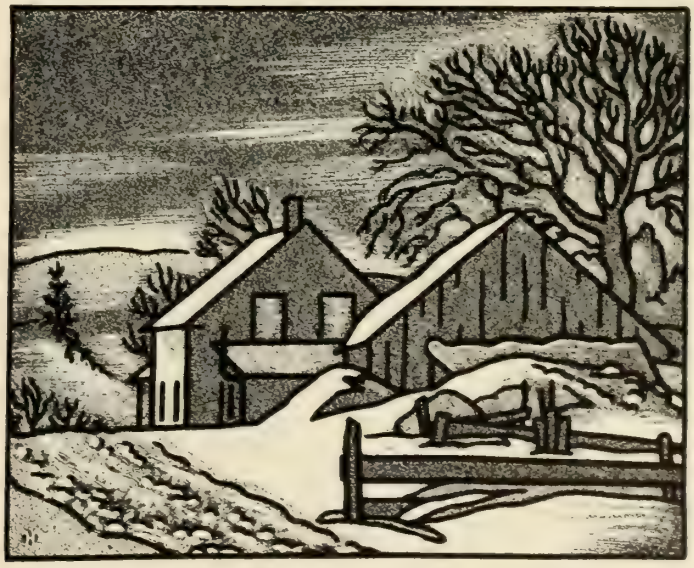


Figure 32: Special shading films are applied directly over a bold outline drawing. Engraving: This is reproduced by a copper line plate.



Figure 33: Modern broad-point drawing made with a heavy ball-pointed pen. Engaving: This is reproduced by a zinc line engraving.



Figure 34: Special films were applied directly to the line drawing. Engraving: This is reproduced by regular line engraving on zinc plate.



Figure 35: Transograph films. Negative print from the drawing in Figure 33. Films are applied directly to the copy. Engraving: Zinc line.



Figure 36: Brush drawing on illustration board, made with a single brush for varying thicknesses. Engraving: Regular line on zinc plate.



Figure 37: Bold pen-and-ink made with a single broad nibbed pen used sideways for thin lines. Engraving: Line engraving on zinc plate.



Figure 38: Bold pen-and-ink drawing. This is Figure 37 with a special shading film applied to copy to give tint. Engraving: Line on zinc.



Figure 39: Silhouette in pure black-and-white; the lack of line detail and tone gives basic simplicity. Engraving: Regular line on zinc plate.



Figure 40: Silhouette. Grayed effect is obtained by stripping a halftone tint on the solid blacks shown in Figure 39. Engraving: Zinc plate.



Figure 41: Black, white, and gray made from Figure 39 with a Transograph screen over the drawing. Engraving: Regular line on zinc plate.



Figure 42: Drawing of Figure 39 made with tints of Transograph film applied directly to the copy. Engraving: Reproduced by a zinc line plate.



Figure 43: Pen-and-ink effect from Figure 39 produced by two shading films overlaid at right angles. Engraving: Line on zinc plate.



Figure 44: Wood-engraving effect is obtained by an overlay of Bourges shading films with the engraving pattern. Engraving: Zinc line.



Figure 45: Photostat tone print. This effect was produced from Figure 39. Engraving: This is reproduced by a straight copper halftone.



Figure 46: Decorative tone effect obtained by special Photostat. Photo is from Figure 39. Engraving: Reproduced as a straight halftone.



Figure 47: Photostat. This illustrates a shadow print made from Figure 39. Engraving: Reproduced by highlight halftone engraving on copper.

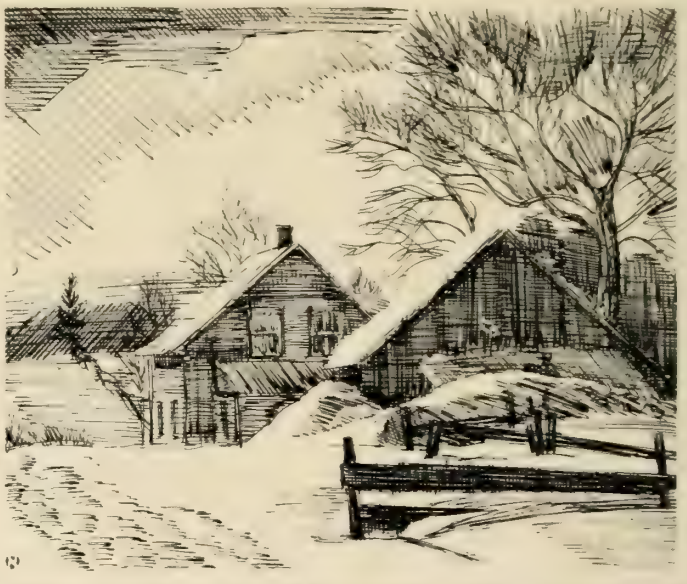


Figure 48: Scratchy pen-and-ink technique produced with a fine pen point is here illustrated. Engraving: This is a regular zinc line cut.



Figure 49: Etching effect from scratchy pen-and-ink and fine grain Bourges shading film. Engraving: Highlight halftone on copper plate.



Figure 50: Study in grays. Two dark tones on light gray paper, with an opaque white used for lights. Engraving: Highlight halftone copper.



Figure 51: Coquille board with medium grain used with a litho crayon and brush. Engraving: Reproduced by a zinc line engraving.



Figure 52: Pencil and brush drawing made on Ross Board with straight line grain. Engraving: Reproduced by line on copper plate.



Figure 53: Crayon drawing made on a Ross Board with straight line texture. Engraving: This is reproduced by regular zinc line engraving.

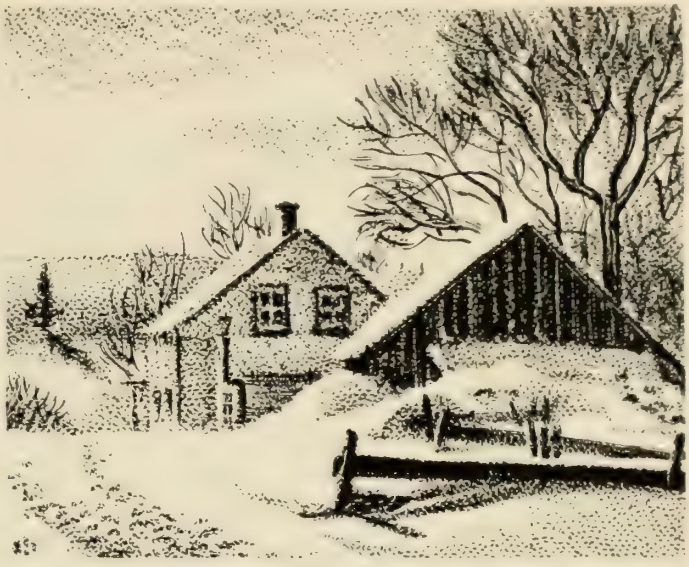


Figure 54: Pebble surface. Coarse grain Ross Board, using grease crayon for tonal effect, and a brush for blacks. Engraving: Line on zinc.

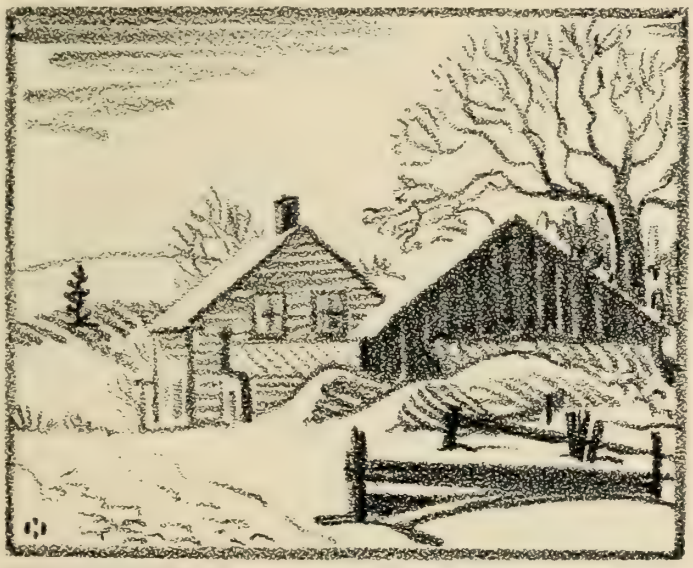


Figure 55: Coquille board of coarse texture, with the drawing made with litho crayon. Engraving: Reproduced by regular zinc line plate.

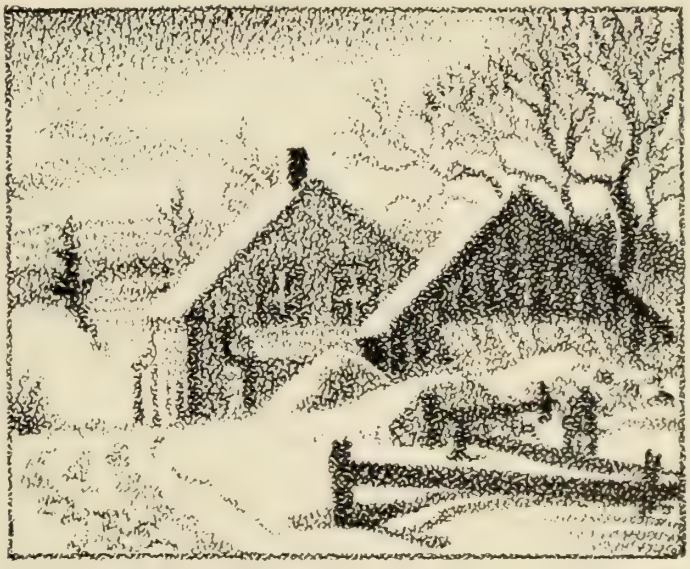


Figure 56: Coquille board crayon rendering, drawn at half this size, enlarged by engraving for coarse pattern. Engraving: Zinc line plate.



Figure 57: Charcoal drawing, smudged, on Strathmore charcoal paper. Engraving: This is reproduced by a straight halftone engraving on copper.



Figure 58: Charcoal drawing rendered on a very rough surface illustration board. Engraving: Reproduced by regular zinc line engraving.

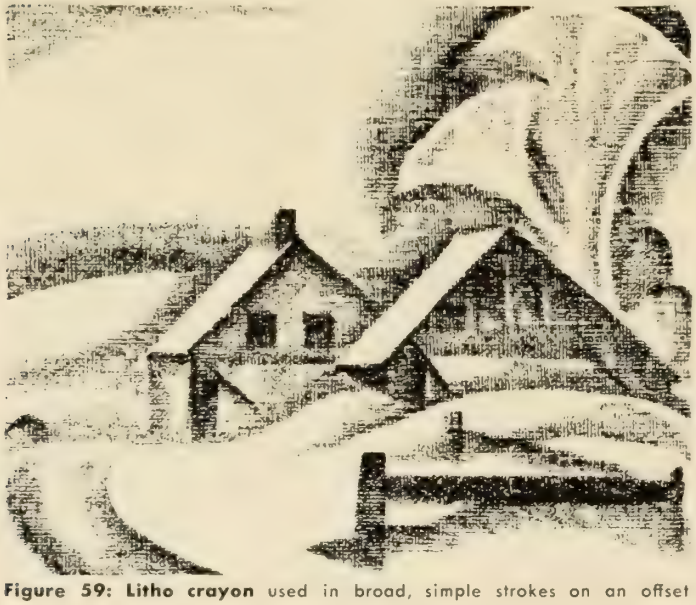


Figure 59: Litho crayon used in broad, simple strokes on an offset paper with a linen finish. Engraving: Regular line plate on copper.



Figure 60: Stipple drawing made with pen points of varying size drawn on Royal Crest paper. Engraving: Reproduced by line on a zinc plate.



Figure 61: Coarse spatter obtained by applying inked toothbrush. The pure white areas are painted out. Engraving: Regular line on zinc plate.



Figure 62: Airbrush technique is here shown. Coarse spatter is obtained with the airbrush. Engraving: Regular-line engraving on a zinc plate.



Figure 63: Doubletone (Craftint) bristol is used. Light and dark tints are developed with special fluids. Engraving: Regular zinc plate.



Figure 64: Doubletone (Craftint) bristol made with special developing liquids: only the tones are drawn. Engraving: Line plate on zinc.



Figure 65: Doubletone (Craftint) bristol made with special developers; the drawing is made with few strokes. Engraving: Line plate on zinc.



Figure 66: Doubletone (Craftint). Reverse plate made directly from the copy for Figure 65. Engraving: Line on zinc plate, from a line positive.



Figure 67: Washtone (Craftint) bristol. Tones and screen obtained by developers. The whites are painted out. Engraving: Line on copper plate.

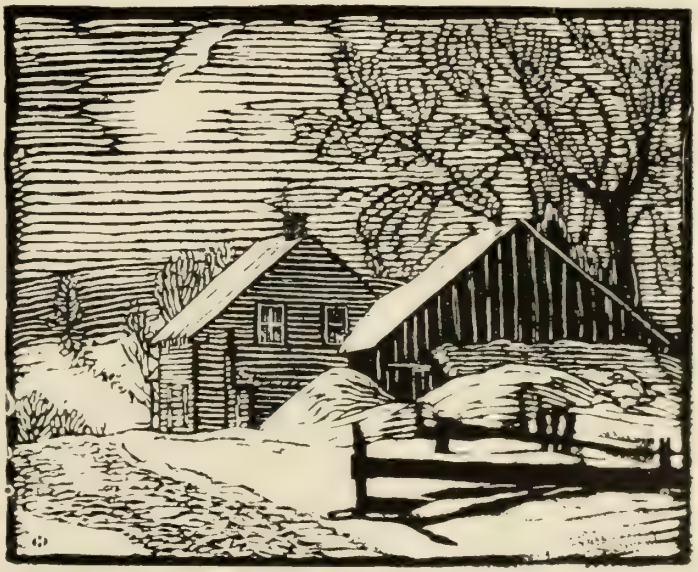


Figure 68: Linoleum print effect. Opaque whites are painted in, flooded with black, and white then washed out. Engraving: Line on zinc.



Figure 69: Lace effect is photographically produced by the Weber process from Figure 68. Engraving: Straight halftone on copper plate.

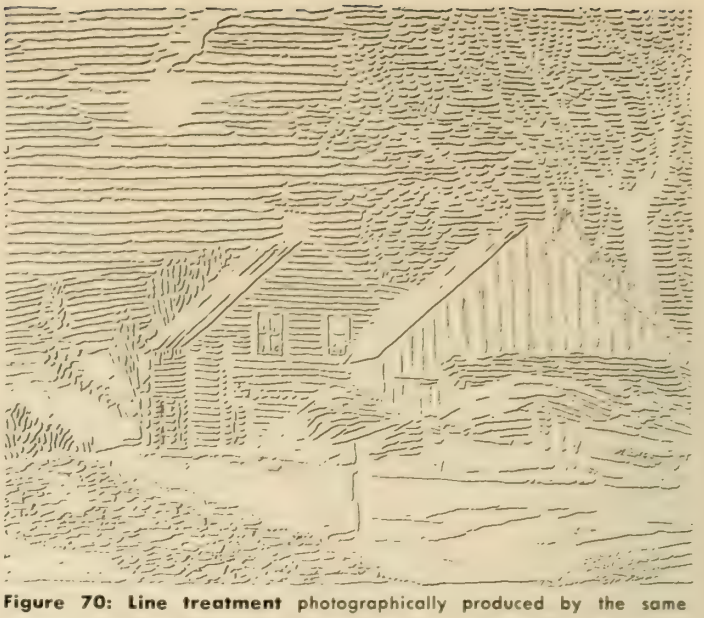


Figure 70: Line treatment photographically produced by the same process, also from Figure 68. Engraving: Regular zinc line engraving.

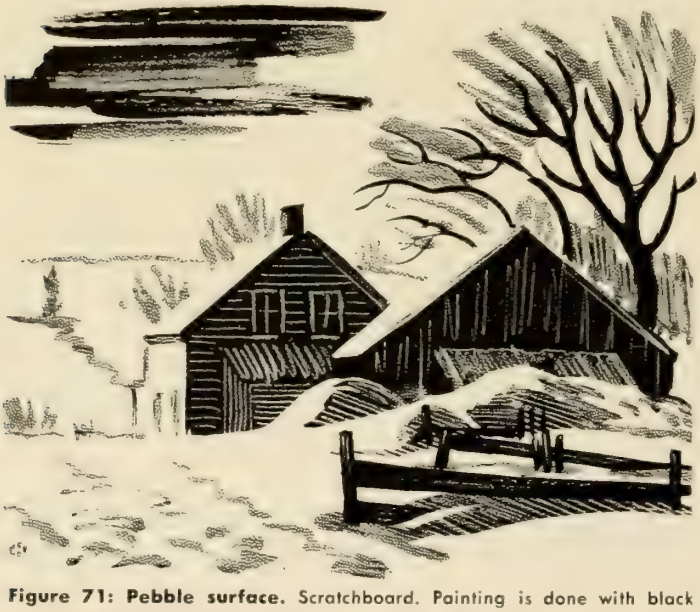


Figure 71: Pebble surface. Scratchboard. Painting is done with black ink. Grays obtained by scratching top surface. Engraving: Line on zinc.



Figure 72: Pebble surface. Scratchboard. Reproduced by a reverse plate from copy for Figure 71. Engraving: Zinc line, from a line positive.



Figure 73: Scratchboard drawing is made with fine point, and "liner" engraver for the multiple strokes. Engraving: Line on copper plate.



Figure 74: Scratchboard. Reproduced by a reverse plate from the same copy as Figure 73. Engraving: Line on copper plate, from a line positive.

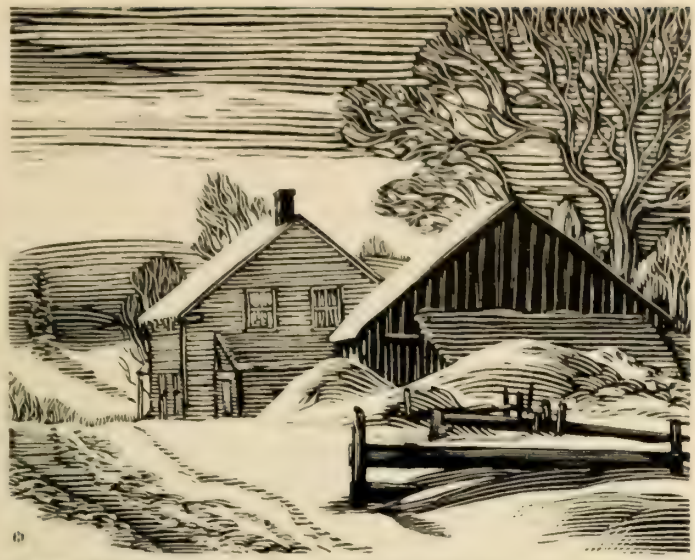


Figure 75: Scratchboard drawing rendered with several widths of "liner" tools. Engraving: Reproduced by a regular zinc line engraving.



Figure 76: Scratchboard drawing made entirely with a special "liner" tool. Engraving: Reproduced by a line engraving on a copper plate.



Figure 77: Wood-engraving, cut directly and printed from a duplicate plate. Duplicate: Reproduced from a wax-mold copper electrotype.



Figure 78: Dry brush opaque gray on a coarse grained illustration board, with the dry-brush blacks added. Engraving: A highlight halftone.

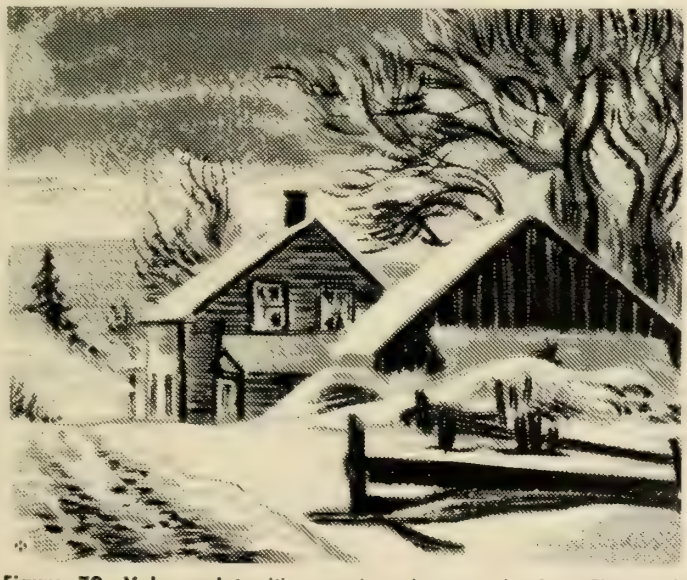


Figure 79: Velox print with an enlarged screen dot from Figure 78 is shown here. Engraving: Reproduced by regular zinc line engraving.



Figure 80: Dry brush reproduced by a reverse plate from the copy for Figure 78. Engraving: A straight halftone, from a halftone positive.



Figure 81: Plastic print photographically produced by the Weber process, from Figure 78. Engraving: Reproduced by a straight halftone.



Figure 82: Soft pencil, smudged, on Cameo tinted paper; the highlights are added with opaque white. Engraving: Highlight copper halftone.



Figure 83: Gray paper, porous texture. Soft pencil blacks with white pencil tones, and opaque white for the pure lights. Engraving: Halftone.



Figure 84: Visual made with a very soft pencil, and smudged on tracing paper. Engraving: Reproduced by a straight halftone, copper.



Figure 85: Visual made with the broad strokes of a litho crayon on tracing paper. Engraving: Reproduced by a regular halftone engraving.



Figure 86: Visual made with the broad strokes of a litho crayon. Engraving: Halftone with soft vignette finish, with the whites tooled out.

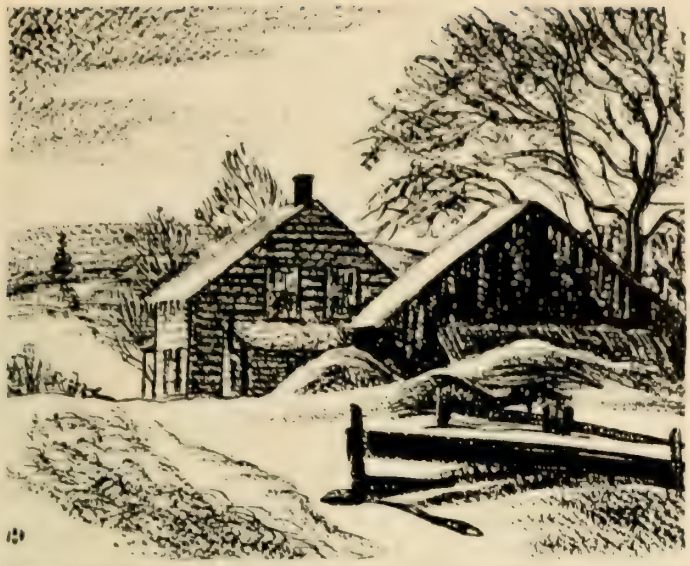


Figure 87: Dry brush. Single brush used on porous grain board. Stipples are obtained by lightly dragging a dry brush. Engraving: Zinc line.



Figure 88: Wash drawing freely rendered on a Cameo surface drawing paper. Engraving: This is reproduced by a straight copper halftone.



Figure 89: Wash drawing freely rendered with the ink lines flowing into wet tone washes. Engraving: Reproduced by highlight copper halftone.



Figure 90: Wash drawing reproduced by a reverse plate from the copy for Figure 89. Engraving: Straight copper halftone, from halftone positive.



Figure 91: Pen-and-ink and wash combined, provides an interesting decorative effect. Engraving: This is reproduced by highlight halftone.



Figure 92: Pen-and-ink and wash. A reverse plate made directly from the copy for Figure 91. Engraving: Copper halftone, from halftone positive.



Figure 93: Pen rendering, applied over washtones while still wet. Engraving: This is reproduced by an ordinary halftone copper engraving.



Figure 94: Wash drawing on an illustration board, combined with a dry-brush rendering. Engraving: Reproduced by regular copper halftone.

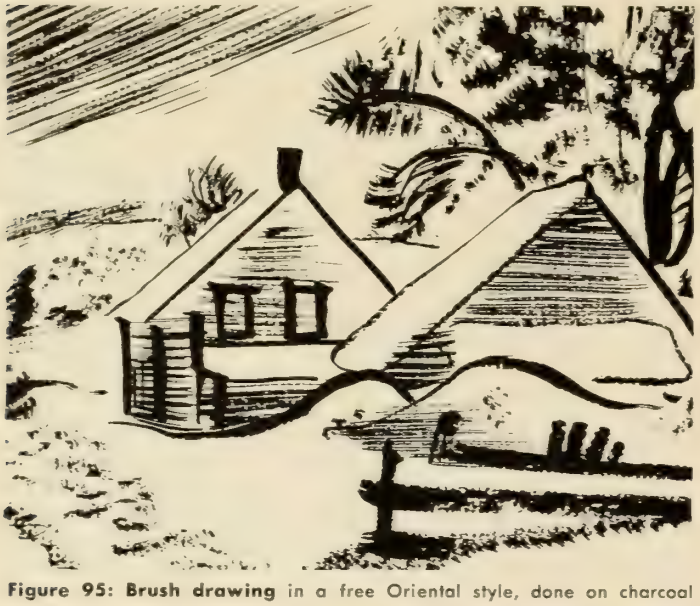


Figure 95: Brush drawing in a free Oriental style, done on charcoal paper. Engraving: Reproduced by a standard line engraving on zinc.



Figure 96: Brush drawing freely rendered on smooth coated stock. The whites are scraped away with a razor. Engraving: Line on zinc.



Figure 97: Airbrush technique is illustrated here. Sharp whites in engraving outlined and routed out. Engraving: regular halftone, on copper.



Figure 98: Soft pencil drawing on dull coated stock is here shown. Engraving: This is a standard highlight copper halftone, with 133-screen.



★ *This drawing was made on Doubletone paper, Pattern No. 209 and reproduced actual size.*

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Shading media chart

The numerous materials and techniques used by the artist or the photo-engraver to obtain a wide variety of attractive tonal effects in line art work

Glenn C. Compton

Name and description	How to use	Remarks
Artist's shading sheets **Type:** Transparent overlay film with halftone and Ben Day patterns in black, white, red. Red is transparent to the eye, opaque for photography and contact printing. **Where used:** 1. By the artist over original copy for reproduction by letterpress, lithography, and gravure. 2. Direct to metal for contact printing on photo-engraved and lithographic plates. 3. For silk screen contact printing. **Number of patterns:** More than 200 patterns in positive and negative. All designs obtainable in black, white, red, orange, trans-opaque and trans-raaz. **Screen:** From 133-line screen to coarseness of six dots to the inch.	**Art procedure:** 1. Place sheet over copy, tip one side with cement, let sheet lie flat. 2. Remove pattern where not wanted with paper stump, wooden or plastic stylus. **For contact printing:** 1. Draw direct on sheet as on drawing paper, with water solvent or water resisting ink, to create negative or positive. 2. After designs are completely worked up, fix with special hard-quick powder. 3. Resulting drawing can be photographed as copy for reproduction, or 4. Used direct as negative or positive for contact printing on metal or silk screen. **Press sheets:** Adhesive shading sheets, same as above, but have adhesive backs, and when pressed upon drawings, will adhere to them. **Trans-raaz sheets:** Transparent overlay sheets with stippled surface for color reproduction. Using colored special pencils, make entire color drawing on one trans-raaz sheet back up with white or colored sheet of paper, then photograph for color separation.	**For color process work:** 1. Flaps are made for each color on which all desired tones for that color are attached over key copy, each flap to be photographed separately but at same focus, or 2. It can be used as negatives or positives (black or white patterns) for direct printing on sensitized metal or silk screen: a. For photo-engraved or albumin offset plates, sheets are worked up negatively, with all sections wanted white painted in opaque (black). b. For deep etch offset plates and silk screen, sheets are worked up positively, with opaque or black painted in only where solids are wanted. (Made by Transparent Printing Corporation)
Bourges artist's shading sheets **Types:** 1. Opaque, halftone, Ben Day, and character effects on seasoned transparent plastic sheets in black and white. 2. Trans-opaque red sheets, in same detail as above, that are transparent to the eye and opaque for photography and contact printing. 3. Trans-raaz sheets on which the same detail as above is transparent and raised, having a tooth that can be worked up like Ross or coquille board. 4. Seasoned transparencies (blanks), no color or detail, but maximum transparency or flatness. **Where used:** 1. Over original line copy to add shading, character, or detail.	**Art procedure:** Shading sheets are usually placed over black-and-white copy and held in position with rubberized tape on one side, allowing sheet to lie flat. Wherever design is not wanted, it is rubbed off with paper stump or wooden or plastic stylus. The large areas may be removed more quickly with a solvent.	Bourges artist's shading sheets can be used to create what is known as a Ben Day type of color work. (Made by Bourges, Inc.) [Chart continued on page 102]

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Shading media chart, continued

2. On white or black paper free of other copy.
3. Over sensitized metal for contact printing, for letterpress, gravure, and lithography.
4. Over sensitized silk screen and carbon tissues.
5. Over photographs and photographic negatives for subduing or accentuating or incorporating effects. All sheets can be used for original copy, over original copy, for the incorporation of character, shading, and color. All such copies can be reproduced by any photographic method of making plates, and can be printed by letterpress, lithography, or gravure.

Number of patterns:

More than 200 patterns are available in all "shading sheet" designs. With few exceptions each pattern may be obtained in black, white, trans-opaque and trans-raaz.

Remarks:

Colotone and Solotone sheets

Types:

1. Colotone and Solotone sheets are transparent plastic in solid colors having no detail except a fine tooth.
2. Colotone sheets are available in five standardized tone values from 10 per cent to 100 per cent in red, yellow, orange, green, blue, and purple. All colors are transparent and removable.
3. Solotone sheets, similar to Colotone but in black-and-white, are available in 10 standardized values from 10 per cent transparency to 100 per cent opacity.

Number of patterns:

Forty different sheets make up standardized range.

Where used:

See data above on Bourges artist's shading sheets.

Art procedure:

1. Color scheme is visualized by placing different Colotones over copy. Each color can be overlapped to increase values, with different colors for contrast and combination.
2. Selected color is attached over copy with rubberized, Scotch, colored or transparent tape. Color then should be rubbed off where not wanted with wooden or plastic stylus. Large areas can be quickly cleaned off with ink solvents such as Xylene. Color flap then becomes color copy.
3. Color plates are reproduced by photographing Colotone flaps over white paper. Flaps (and paper) then are removed and key or black copy photographed for the same length of time and at the same focus. This procedure is used regardless of the number of colors or tone values in different colors. The correct color angles must be used when halftones are overlapped. Different tone colors can be achieved, and solids and pure whites in one negative can also be obtained.

Colotone and Solotone sheets can be used independently to create complete color copy, or they can be used in combination with any form of black-and-white copy to add any additional colors. This permits both the visualization of the complete color effect before plates are made, and also creates color copy of each color plate in perfect register as the colors are automatically separated from the black and each other.

Color correction:

These sheets also can be used for color correction of color art work or transparencies. Sheet of desired color and intensity is placed over color copy and handled as described above. Art work is photographed through overlay, permitting visualization of color correction before making the plates and leaving art work in original condition.

(Made by Bourges, Inc.)

Contak

Type:

Transparent overlay film with adhesive back.

Where used:

On art copy.

Number of patterns:

Thirty-eight patterns; halftones, lines, stipples, grains, textures, etc. All patterns obtainable in reverse; user should specify black or white.

Screen:

25- to 65-line in halftone patterns. The design number of each halftone pattern corresponds to the number of lines per inch: D-45 is a 45-line screen.

How furnished:

In sheets 9 by 12 inches.

Preparation:

1. Film and lining are separated one-half inch at top of sheet.
2. Lining paper is folded back and creased, exposing adhesive.
3. Exposed adhesive edge is stuck to top of copy.
4. Lining is stripped off back, pulled toward user, thus laying screen over copy.
5. Sheet of paper is placed over film, and rubbed lightly to insure uniform contact.

Art procedure:

1. In small areas, where pattern is not wanted, it is scraped off with stylus pencil.
2. In large areas, if drawing is on rough bristol board, it is cut away with sharp knife and stripped off.
3. In removing wax protecting sheet from pieces cut from a large sheet with no starting edge, the wax sheet is punctured, but not through the cellophane, raised for gripping with fingers, and stripped.

Additional screen pattern may be obtained by pasting one screen pattern over another at a different angle. For protection against scratching, Contak fixer may be applied after work is completed. This also is supplied prefixed.

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[Chart continued on page 104]

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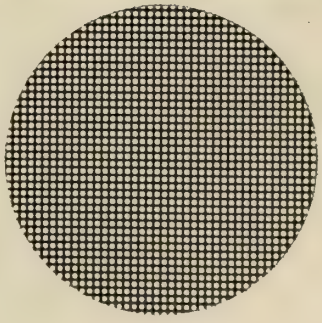
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Shading media chart, continued

Doubletone

Type:

Drawing board with two invisible patterns brought out by two chemical developers.

Where used:

On art copy.

Number of patterns:

Seventeen patterns, each with dark-tone and light-tone hidden pattern. Light-tone is a diagonal line pattern, dark-tone a crosshatch.

Screen range:

32- to 80-line.

Art procedure:

1. Outline sketch is penciled on Doubletone board.
2. Solid blacks are put in with brush or pen, using waterproof ink.
3. Dark tone developer is applied first with pen or brush to bring out dark tones where desired.
4. Sketch is blotted dry.
5. Light tone developer is applied where light tones are desired.
6. Pencil outlines are erased.
7. Engraver or lithographer then handles it as any line copy.

Remarks:

Additional patterns may be obtained by using top sheet film over drawing, after Doubletone patterns are brought out by developer.

(Made by The Craftint Manufacturing Company)

Multicolor

Type:

Transparent shading films and boards.

Where used:

1. Lithography: in the production of albumin and deep etch plates.
2. Letterpress.
3. Photographic silk screen.

Screens:

Screen patterns are processed on Multicolor board or film at angles 30 degrees apart to eliminate moiré. Craftint Multicolor process color chart shows 63 different colors available by superimposing dots on dots, lines on dots, etc.

Art procedure:

1. Key outline photo-engraving is made from original drawing; this may be used as the final black plate.

2. With this key outline plate, a blue proof or impression is pulled on three separate Craftint Transparent Shading Films, using Craftint Special Blue Proofing Ink. Each sheet is properly angled to represent the yellow, red, and blue plates.

3. Starting with the first sheet (75° angle) from which the yellow plate is to be made, the blue imprint is followed and Craftint Special Opaque No. 4 applied to outline all areas that are to be shaded—all solids and dead metal.

4. Where intermediate yellow tones are desired, Craftint Developer No. 23 is applied to sheet with clean brush. This will bring up an opaque line pattern. Sheet then is blotted carefully to take up all excess developer.

5. For light yellow tones (dot formation), a separate clean brush is used with Craftint Developer No. 21 to develop the crosshatch, which in the final printing will appear on the plate as a dot. Developed areas again are blotted. Copy now is completed for printing solids, lines, and dots for the yellow plate.

6. This same procedure is followed on the sheets that will represent the red (45° angle) and blue (105° angle) plates. These finished shading films now are ready for use as negatives with which to start to print the metal plates.

7. Sheets are placed face down on printing frame, pattern side to metal, and exposed. Ensuing procedure is as usual in the making of photo-engravings.

Multicolor is available as a drawing board or film. Boards are furnished in sets of three, each bearing two photographically "invisible" Ben Day type screens, a 25 per cent dot pattern, and a 50 per cent line pattern, and are applicable for the production of both albumin and deep etch plates, as well as photo-engravings. At present, they are available in 60- or 80-line patterns.
Film is available in two forms; one has a crosshatch and a line pattern for the making of negatives for albumin plates, the other a dot and line pattern that serves as positives for albumin plates. A developing solution applied by brush brings up dot pattern and a second chemical develops the lines. No photographic negatives are needed for red, blue, or yellow plates. Craftint Multicolor Shading Sheets are processed with Ben Day tints at the proper angles and each sheet carries invisible dot and line pattern in perfect register. The boards and films provide complete camera copy for the respective negatives, positives, or plates.

(Made by The Craftint Manufacturing Company)

[Chart continued on page 104a]

Shading media chart, continued

Ross drawing board

Type:

Scratch board on surface of which is embossed a stipple, diamond line or other pattern

Numbers of patterns:

Ninety standard patterns.

Art procedure:

1. Pencil, crayon, ink, wash, or airbrush drawing is made as on any drawing surface.
2. Where tones instead of solids are wanted, surface is scratched with sharp knife or burnished with sand paper, which brings up whites to develop pattern in scratch board.
3. Art is reproduced as line cut or halftone.

Remarks

Scratch board is made not of wood but of heavy cardboard, with layer upon layer of pigment that produces the scratching quality. Various effects can be obtained in one drawing by cutting sheets and putting several patterns together.

(Made by Charles J. Ross Company)

Rossco stip

Type:

Drawing paper with a raised stipple surface.

Art procedure:

1. Ink, pencil, crayon, or wash drawing is made as on any drawing surface. Stippled surface produces halftone pattern automatically.
2. It is reproduced as line cut.

Rossco Stip is a stipple-surfaced drawing paper that requires only to be drawn upon; it is not a scratch board.

(Made by Charles J. Ross Company)

Singletone

Type:

Drawing board with invisible Ben Day patterns brought out by chemical developer.

Numbers of patterns:

Sixty patterns, 16- to 80-line screen in Ben Day and halftone patterns. Main designs are halftone dots and lines, with some textures.

Art procedure:

1. Outline sketch is made as on any drawing board.
2. Special developing solution is applied with brush or pen to areas where shading effect is desired.
3. Work is then blotted dry.

Additional patterns may be obtained by using top sheet film over drawing, after Singletone pattern is brought out by developer.

(Made by The Craftint Manufacturing Company)

Singletone for color process

Type:

Same as regular Singletone.

Patterns:

There are five special halftone patterns, all 60-line screen, each turned at proper angle to prevent moiré or secondary pattern where overprinted.

Art procedure:

1. Outline drawing is prepared.
2. Engraver makes line plate of drawing.
3. Impressions of this plate are made with water-soluble blue ink or carbon paper on special color pattern Singletone drawing boards, one impression for each color, and different screen angle for each.

For color separation:

1. Solids are painted in with India ink. The hidden screen then is developed where tones are desired for each color plate, drawing being prepared for the yellow plate first.
2. After drawings for red, yellow, blue, and black plates are completed, the engraver should handle as regular line copy.

(Made by The Craftint Manufacturing Company)

Top sheet

Type:

Transparent, nonadhesive overlay film.

Art procedure:

1. Top sheet is placed over copy and held in position by tipping with frisket cement or Scotch tape. Not necessary to paste entire sheet down.

[Chart continued on page 104b]

Shading media chart, continued: Top sheet

Where used:

1. By the artist over original copy to be photographed.
2. By the engraver or lithographer as a negative in the printing frame to shoot through on sensitized metal.

Number of patterns:

Sixty black patterns, same as in Singletone drawing board. Each pattern also available in reverse (or white). Black top sheet puts halftone patterns in white areas; white top sheet puts reverse halftone patterns in solid black areas.

Art procedure, continued:

2. Where design pattern is not desired, it is rubbed off with orange stick, paper stump, or wood stylus.
3. Black top sheet is used for tinting white areas; white top sheet for breaking up black areas.
4. Any part of pattern of white top sheet may be changed to black by applying special developer with brush.

Remarks:

Additional patterns and fabric effects may be obtained by laying one top sheet over another at various angles. Combination positives can be made by engraver or lithographer by using top sheet with opaque type proofs on cellophane. Sheets are furnished in varying sizes with different patterns: 14½x23", 15x18½", 17x19½", and 17½x24".

(Made by The Craftint Manufacturing Company)

V-film

Type:

Transparent overlay film with invisible standard shading patterns. Adhesive backed.

Where used:

1. By the artist over original copy to be photographed.
2. By the engraver or lithographer directly on photographic negatives.
3. On silver prints, photocopies and tracings.

Number of patterns:

Sixty black patterns, same as in Singletone Drawing Board and Top Sheet Film. Patterns may be combined for varied effects and may be overlaid up to 3 thicknesses.

Screens:

Sixteen- to eighty-line halftone patterns.

Art procedure:

1. V-Film is placed over copy or negative to be shaded.
2. Smooth out V-Film and rub down well to adhere sheet to drawing.
3. "Bring up" design pattern where wanted with V-Film Developer. Clear areas are left as is.
4. V-Film is then handled by engraver as line plate.
5. V-Film pattern may be removed and another applied when same drawing is to be used again in a different reduction. Sheets are furnished in 9 x 12 and 12 x 18" size.

(Made by The Craftint Manufacturing Company)

Zip-a-tone

Type:

Transparent overlay film with adhesive back.

Where used:

On art copy, Silverprints, photocopies, tracing cloth, etc.

Number of patterns:

More than 200, including reverse of many of black patterns. Main designs include halftones, lines, stipples, textures, etc.

Screen:

16- to 60-line halftone patterns. Some identical halftone patterns are furnished in three sizes, for combining in one layout drawings for one-half reduction, one-third reduction, and same size.

Art procedure:

1. Screen is placed over part to be shaded.
2. Sheet of paper is rubbed over screen, starting at bottom and moving from left to right and upward as screen adheres to drawing.
3. Parts not wanted are cut and stripped away with special cutting needle. Screen then is gone over again as in No. 2 above.
4. Screen is gone over with bone burnisher if it is desired to have screen adhere permanently after cutting and stripping are finished.
5. It then is handled by engraver as line plate.

For color work:

1. Sheet of celluloid is thumb-tacked over key drawing.
2. Solids are painted in with Pelican ink or lamp black; India ink should not be used.
3. Zip-a-tone is applied on celluloid where shading is desired and cut to register. Procedure is repeated on separate sheet of celluloid for each color.

No adhesive is left on drawing; screen may be removed and another applied when same drawing is to be used again in a different reduction. Sheets are furnished in 8x12" size, with a few 16¾x21¾".

(Made by Para-Tone Company)

1 Art and photography

Photo-engraving **2**

Photo-engraving

Push tab down, fold on this crease then fold upward on other crease over edge of page and insert in slot.

3 Electrotypes, duplicate plates

4 Paper

5 Printing processes

6 Binding, mailing, etc.

7 Typography

8 Buyers' guide, index, etc.

Thumb-dex patent 2300623
Other patents pending

Photo-engraving

105 Photomechanical developments: J. S. Mertle
108 Copy for photo-engraving: John T. Wrigley
112 Non-reproducible copy: Richard Gould
113 Engraving media for artwork: Jack Koehler
114 Engraver's proofs: Harold M. Comstock
116 Screen patterns: Robert Hamilton
118 Combination and highlight effects: Walter M. Kelsoe
120 Proportion calculator: Edward M. Gottschall
122 Halftone screens: Stewart Haines
126 Making a photo-engraving
128 Color plates for comics: Everett R. Eaton
132 Standard photo-engraving scales: W. B. Lawrence
136 Photo-engraving estimator: Edward M. Gottschall
150 Ben Day: E. S. Beck
154 Step-and-repeat machines: F. Herbert Anderson

Photomechanical developments

Improved quality and speed of production in all printing processes result from art, photographic, and platemaking techniques now made available

J. S. Mertle

During the last few years, there have been many new developments in the field of photomechanics. Some are of direct and immediate benefit to the buyer of printing, and enable him to obtain a better product or service or make possible a saving of money or time in production.

Other developments are relatively technical, such as new chemicals, materials, and apparatus used by photographers, lithographers, and photo-engravers. Still other new devices are as yet imperfect, or not commercially feasible as of this writing; yet they indicate the trends of thought and research in the Graphic Arts.

The following article, although not a complete listing of every new product or service, describes the more important, more practical, and more promising products and trends of development.

Originals

The original or "copy" is the basis of every photomechanical reproduction. In this direction, the greatest progress has been made in color originals, and undoubtedly the most important development was the introduction by Ansco of processes and materials with which pictures could be made and immediately processed by the photographer on his own premises. This was a decided step forward as compared to earlier materials requiring processing at depots established by the manufacturer, a situation that obviously results in delay.

The first of these products, Ansco Color Film, was announced to the trade in 1943, although it previously was employed by the armed forces. Generally considered, it was similar in principle to Kodachrome, but permitted consumer (home) processing by a fairly simple procedure requiring about an hour and a half. The final result is a full-color transparency (positive) on a film base.

Contemporary with the color film, Ansco also announced its Color Paper, on which color pictures could be obtained from regular black-and-white separation negatives, or from line negatives, the latter procedure being known as Colorline. The Ansco Color Paper also saw prior use by the military, and furnished a convenient medium for the rapid reproduction of colored line diagrams and multicolor maps.

The third Ansco product was Printon, a multilayer material coated on an opaque film support and intended for making copies (prints) direct from transparencies on Ansco Color Film. In company with the film and paper, exposures on Printon could also be processed by the photographer, and the material is seeing considerable use for making any number of prints from a suitable color film image.

Meanwhile, the Eastman Kodak Company also was making contributions in the form of color originals. In 1942, the Kodak concern announced Kodacolor film, a material intended to provide color prints on paper from roll film negatives exposed in amateur cameras. The colors produced in the negative are complementary to those of the subject, but this representation is reversed in the paper prints, which display the colors and hues in proper relationship with those of the original subject.

Previous to the introduction of Kodacolor film, Kodak in 1941 offered Kotavachrome and Minicolor prints, these being reproductions from Kodachrome transparencies. Copies by these processes are known today as Kodachrome (Minicolor) and Kodachrome Professional (Kotavachrome) prints.

The latest (1946) Kodak color material is Ektachrome film. This is somewhat similar to Kodachrome in principle; but unlike the latter material, exposures on Ektachrome are intended for self-processing by photographers, the final result being a color film transparency.

Departing from color film images and prints, still another type of colored original was introduced by Kodak (1941), this one especially for photomechanical reproduction. This was the Fluorescence Color Process, based on the reproduction of paintings prepared with fluorescing pigments. Special palettes of such pigments are furnished by the Kodak Company, the painting or sketch being reproduced by a special method of color photography, with the entire procedure aimed at more faithful color rendition in final reproduction.

But progress in color originals has not been confined to the Ansco and Eastman organizations. An improved type of drawing material or shading sheet was introduced in 1942 as the Multicolor process of the Craftint Company. Originally developed for the preparation of comic cartoon drawings, the Craftint procedure is based on use of the concern's Doubletone Drawing Board, which carries an invisible but developable line and dot pattern at different angles to permit three-and four-color illustrations without moiré.

The effects in the Craftint process approach Ben Day in character, and it is claimed that a range of about 64 colors or hues is possible by superimposing various combinations of patterns in the printed reproduction from the respective Craftint drawings.

Special drawings for highlight halftone effects continue to occupy the attention of inventors, and in the last few years several processes have been patented, some of which are nothing more than adaptations of the earlier fluorographic process of Walter S. Marx.

The recently (1947) introduced Kemart process departs from the Marx principle in that fluorescing drawing surfaces are employed. Sketches made in the Kemart manner with nonfluorescing pigments are illuminated with special auxiliary camera lamps, which give off a purple light and cause the whites of the drawing to glow, thereby rendering highlighting easy and certain.

(For data on the Kromolite process, see Page 119.)

Phototextyping or setting text (type) matter by means of photography still is in the experimental stage despite the numerous patents issued in recent years. Time will tell whether a really efficient

and practical apparatus will result from the half-century of research and effort already expended on the project.

Photography

Enormous progress has been made and many developments effected in photography during the last six years, a great deal of it the result of accelerated wartime research. Much of this is only of technical interest, and while the results probably will have increasingly greater effect in photomechanics, our remarks of the moment must necessarily be confined to those matters already exercising influence in the Graphic Arts.

Among the subjects receiving the greatest attention is lens coating, or treatment of the glass elements of photographic lenses, to increase their speed (transparency).

All the various methods evolved are based essentially on the process developed (1940) by Cartwright and Turner, who thermally evaporated metallic fluorids in a vacuum and allowed the vapor to condense on the glass surfaces.

Coated lenses not only are faster but offer the advantage that scattered light is eliminated within the lens elements, thus reducing flare (ghost images) and overall fog. This results in somewhat sharper line and halftone negatives with process lenses, and in better rendition of colors in reproduction.

Referring to negative material for line and halftone photography, strip film is rapidly replacing the wet collodion plate in process galleries, with an attending increase of production and greater uniformity of result.

The product is furnished in both sheet and roll form, the latter intended for use in the specially designed Chemco cameras that accommodate three rolls of different width. The latest type of strip film is of panchromatic sensitivity, and is particularly useful for direct halftone color reproduction and for the stripping together of intricate color illustrations.

Production in process galleries employing films and dry plates also has been speeded up by the use of rapid fixing baths, which accelerate the rate of fixation and produce cleaner negatives. Such baths have ammonium thiosulphate or combinations of sodium thiosulphate and ammonium chlorid as the active fixing agent, these compounds possessing greater solvent power on salts of silver than does the time-honored solution of hypo (sodium thiosulphate).

Control of camera exposures is widely performed today with photo-electric devices. These compensate for variation in light intensity caused by fluctuation of the electric current feeding the camera lamps, thereby governing the length of exposure according to the volume of light actually falling on the original and required for the production of good quality negatives.

Among the recent devices for the purpose, the Luxometer, introduced in 1945 and designed by Clarence S. Ost, has received the greatest publicity. It is furnished in two general types: one for camera exposures, the other for use on printing frames and photocomposing and photolettering machines.

Line originals

Reproduction of delicate line originals frequently is attended with loss of detial; to cope with this, the Kodak Company in 1944 introduced its Fine Line Process. This consists of placing an unsharp positive mask on the line negative made from the original, registering the two images, and making a contact line positive from the combination. The method was especially intended for the line positives required in rotogravure and for deep etch litho press plates. For photo-engraving, a contact negative must be made from the line positive.

Halftone photography

Aside from special methods of exposing highlight negatives, the most interesting development in halftone photography was the introduction of Kodagraph screens by the Eastman Kodak Company. These screens are of variable opacity and are photographic in nature.

They were originally introduced in 1941 for photolithographic halftone reproduction, specifically for the production from continuous tone negatives of halftone positives (by contact) for dot etching. The latest (1946) type of Kodagraph screen is in the form of a 60-line ruling, for photo-engraving and particularly for the making of halftone negatives for newspaper reproduction.

An increasingly important piece of equipment in halftone photography is the diaphragm control, with which the proper diameter of lens apertures is indicated for various scales of reproduction (sizes) and for different screen rulings. Several new controls have appeared on the market in recent years, among them those produced by Robertson (Newick), Long, Stewart, and Bailey.

Color reproduction

Research and development on this phase of photography continues apace, but much of the effort is directed toward modern color materials and the production of color prints by photographic means. Some reference has already been made to this work in earlier paragraphs; aside from these developments and the introduction of films and dry plates possessing higher color sensitivity and greater resolving power in the case of process emulsions, not much of major importance can be recorded in the photomechanical field.

An interesting innovation in the construction of one-shot color cameras was the apparatus introduced in 1944 by Richard Thomas under the name Thomascolor. It comprises a camera with which four-color continuous tone separation negatives are simultaneously exposed on a single sheet of panchromatic film. The separations so produced are quite suitable for photomechanical reproduction by various methods, the average size of each separation on a 5x7 film being about 2¼x3¼ inches.

The indirect method of halftone color work has seen a revival, not only for reproductions from color film transparencies but also from other types of color originals. Methods have recently been developed that employ waterproof or nonstretch photopaper (Air Map Special) for the continuous tone positives (prints) involved in the indirect process.

Such prints can be made from the separation negatives either by contact or projection, and special apparatus for the purpose has been constructed by the Chemco concern, this consisting of a small darkroom camera—"color separation machine"—and a photographic enlarger. Continuous tone separations from any kind of original are made in the camera, and the enlarger employed to make prints from the separation images on paper that is said to maintain dimensional stability.

Perhaps the most extensive effort in color reproduction has been in the direction of color correction (masking) in order to reduce the corrective manipulation on negatives and printing plates required for satisfactory color rendition in the printed impression.

A wide array of masking methods has been developed. The process evolved (1944) by the Kodak researcher, Yule, embodies the use of unsharp masks. This sort of mask is especially adaptable for correcting faulty color film transparen-



Color photo by Paul Hesse for Liebman Breweries, Inc. brewers of Rheingold Extra Dry Lager Beer through Young & Rubicam, Inc. Won Art Directors Club Award for best display of 1945.

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by Powers

cies; it also is easier to register on the individual color separation negatives.

Relief plate-making

The serious metal shortage during World War II forced the use of copper and zinc in thinner gauge as a conservation measure in photo-engraving. In addition to normal 16-gauge, metal (especially zinc) was rolled to 18- and 21-gauge, but such thinner material was not popular and obviously introduced plate-mounting difficulties. To this end, special fiberboard backings were introduced to bring the thin metal to the thickness of 16-gauge sheets.

Magnesium alloys were employed as substitutes for photo-engraving metals in Germany during the war. The utility of such alloys was investigated in the United States by the Dow Chemical Company, and in 1945 Zomag (Dowmetal) was introduced to American photo-engravers. The particular alloy employed is midway between copper and zinc in hardness and at present is furnished only in 11-point sheets. Besides being about half as heavy as zinc, Zomag offers economy in etching and is claimed to provide a more durable printing plate.

Gas has been the common source of heat for burning-in developed glue prints and powdered plates in relief etching. Lately, however, photomechanics has taken a page from the book of science and investigated infrared rays as a means of heating plates.

The first study (1945) in this direction was conducted in photolithography, where it was found that baking (heating) of albumen press plates increased their durability. The subject also was considered in photo-engraving and in 1945 Willard L. Wheeler designed an Electro-Matic Burn-In Oven or cabinet-like device employing an arrangement of infrared lamps for heating both the top and bottom of glue prints on zinc and copper to burn in the developed image on the metal. This is automatically performed in four to seven minutes.

Etching of copper by electrolysis has seen considerable use in photo-engraving but was not considered practical for work on zinc. Nevertheless, the problem was thoroughly investigated by Albert R. Kreck, who patented (1945) a special electrolyte for the purpose; this consisted of an aqueous solution of sodium sulphate and ammonium thiocyanate, used in conjunction with non-ferrous cathodes. Kreck claims an etching rate (depth) of .001 inch per minute, with a current consumption ranging from 12 to 18 volts.

Incorporation of makeready (premakeready) in halftone etchings to afford better printing surfaces has been attempted by several inventors. The process of James H. Gibson has gained considerable publicity. Introduced in 1939 as the Bump-Up process, the method was re-introduced in 1943 as the Bac-Etch process by the Joseph J. Reilly Company of New York City.

Photolithography

Recent photolithographic effort has been toward developing different printing surfaces. For a time plastic litho plates occupied the spotlight, perhaps because they afforded a substitute for the zinc and aluminum plates employed on small offset presses. Plastic plates enjoyed considerable use by the armed forces, especially in foreign and tropical theatres of war, where climatic conditions tended to increase oxidation of metal surfaces; moreover, the cheapness of some plastic plates permitted them to be discarded after use and thus dispensed with regraining operations.

Some of the plastic plates were intended as supports for photolitho images, while others were devised for direct lithography, such as typewriting (with special ribbons) and work with tusche and crayon. Although the Lithomat and Photomat plates of Gilligan and Mullen were the first to reach the market, the Plastolith plate of Bassist and Toland was the subject of much research and the most patents.

While plastic plates will unquestionably exert some influence in lithography, the return to peacetime conditions has seen lessened interest in such surfaces and greater attention to metallic supports other than zinc and aluminum.

Foremost among such supports are the so-called bimetallic plates, or those consisting of one or more layers of a metal different from that of the main support. The base plate can be zinc, aluminum, copper, brass, steel, stainless steel, or nickel alloys (monel metal). On these surfaces can be deposited zinc, aluminum, copper, chromium, nickel, lead, or other metals capable of electrodeposition. Research on bimetallic plates is still being carried on.

In some of the processes, the surface layer is etched away in the unexposed (nonimage) areas of the plate, whereas in others the coating is supposed to possess greater affinity for lithographic ink.

Because of their greater durability and the sharper results therefrom, deep etch plates continue in popularity as litho printing surfaces. But the regular deep etch procedure requires a line or halftone positive, together with a reversal procedure in plate-making to convert the negative image on the plate into the positive necessary for proper reproduction of the original.

The idea of using a photographic negative as the basis for deep etch plates was entertained years ago (1913) and this principle has been employed by Sidney Blau in his recently (1946) introduced Electron Intaglio Plates.

According to the inventor's latest outline, a cold enamel print from a halftone negative is made on either a steel or zinc plate, the image developed with alcohol, and the plate then dried and slightly heated. After the usual litho counter-etch, the plate is placed in an electroplating bath and a thin film of nickel deposited on the nonimage areas, with the result that the cold enamel print becomes slightly incised and forms an intaglio printing surface.

Rotogravure

In spite of the fact that rotogravure is making immense strides and is being widely employed for commercial and publication printing, no radical photomechanical developments have occurred in the technology of gravure plate-making.

Progress in this phase of the Graphic Arts has been mainly in the design of presses, the photo-electric control of color register on presses, and methods of registering color work on the carbon tissue employed as an acid resist in rotogravure etching.

Improvements have, of course, occurred in the character of the negatives and positives employed for rotogravure, but such developments really are in the domain of photography and have been adapted to gravure requirements.

Some study has been directed to the effect of humidity on carbon tissue, but efforts to supplant tissue by direct sensitization of cylinders with cold enamel or solutions of bichromated colloids have not met with commercial success. Instant drying gravure inks have been developed with resultant increased press speeds.

Although various methods of intaglio (halftone) gravure have been patented, the Dultgen process is the most popular and widely used, particularly for color-gravure work for newspapers.

Copy for photo-engraving

Distinct tonal separation, with the contrasts fully emphasized, is a vital factor in obtaining well-defined details in the finished plate

John T. Wrigley

(EDITOR'S NOTE: This discussion offers one approach to this subject. Another craftsman's viewpoint that covers some of the same ground, but delves into a number of other aspects, is presented in the article on Engraver's Proofs on pages 114 and 115.)

Not all buyers today realize the importance of providing suitable copy for reproduction purposes. The copy is the starting point toward the making of a fine printing plate. Therefore, it should represent a picture of the result that the buyer of illustrated printing will expect in the final printed sheet.

Copy for halftone reproduction on other than first-quality coated stock should be prepared especially for the kind of stock on which it is to be printed.

Start at 60 screen

Beginning with the papers of poorest quality and lowest light reflection—newsprint and its equivalents—the halftone should be 60- or 65-line screen, both for newspaper advertising and for cases in which the original plates are to be electrotyped or stereotyped.

In the latter duplicating process, a flattening of the tonal distinctions of the original halftone takes place. It is obvious, then, that the copy should be prepared with the most extreme tonal distinctions. In other words, it should contain extreme blacks and extreme whites, with as few intermediate gray tones as possible. The deep tones should have sharp, harshly defined detail.

If it is necessary to use light gray tones, they also should be sharply defined, and where they adjoin white areas they should be as white as it is possible to make them. Extreme contrast in every tone—with as few tones as are practical to produce the picture—typifies the copy for newsprint reproduction.

In the next group of paper stocks, such as book, bond, circular, or stuffer, and for papers such as some of the agricultural magazines are printed on, the halftone screen should be 75- or 85-line.

When this type of printing is to be produced from electrotypes, there is some loss of contrast from the original halftone, but not nearly as much as when produced from stereotypes—by which most newspapers are printed.

Budgeted printing

Because of this and because of the low light reflective point of this group of papers, copy for such halftones should contain well-defined detail. More of the gray tones than it is wise to use for good newsprint reproduction may be utilized in copy for these papers.

When snap and brilliance in halftone illustration on these woodpulp papers is the objective—and it should be—the copy should be on the contrasty side, or similar in tone separation to that for the 60- and 65-line screen.

There are many periodicals, advertising pieces, programs, announcements, etc., that fall into the category of printing budgeted carefully for cost. This sort of work frequently is produced on machine and English finish stocks. Halftones of 100- and 110-line screen (occasionally made on zinc) generally are used for papers in this group.

In selecting illustrations for these stocks, copy detail should be watched closely. When pictures or art work are being purchased or edited for such use, special attention should be given to detail in the dark tones, the shadows, or the dark areas of the illustration.

Use on coated stock

Brilliant illustrative copy is the best step toward the production of interesting, clear, and attractive pictures for these book papers. Halftones on such stocks require more ink than those on the better papers. Because of this, muddiness and a loss of tonal separation in the dark tones will result if the details of the subject are not well defined. This occurrence is much too prevalent.

For the coated stocks, grade Nos. 3 and 4, national magazine stocks and similar surfaces, 110- and 120-line screen halftones have proved most satisfactory. When these stocks are to be used, the tonal separation or distinction in the low or dark tones of the halftone is a requirement that may not be overlooked or disregarded. This is especially true on magazine stocks.

There are well-founded reasons for this. When coated papers Nos. 3 and 4 are used, they may have been selected as substitutes for better stocks because of printing price competition, budgeted cost, or other factors. This type of printing must frequently have the appearance of a fine quality job, but unless the copy is prepared to assist the engraver and printer to meet this situation, both will find it a difficult and at times impossible problem.

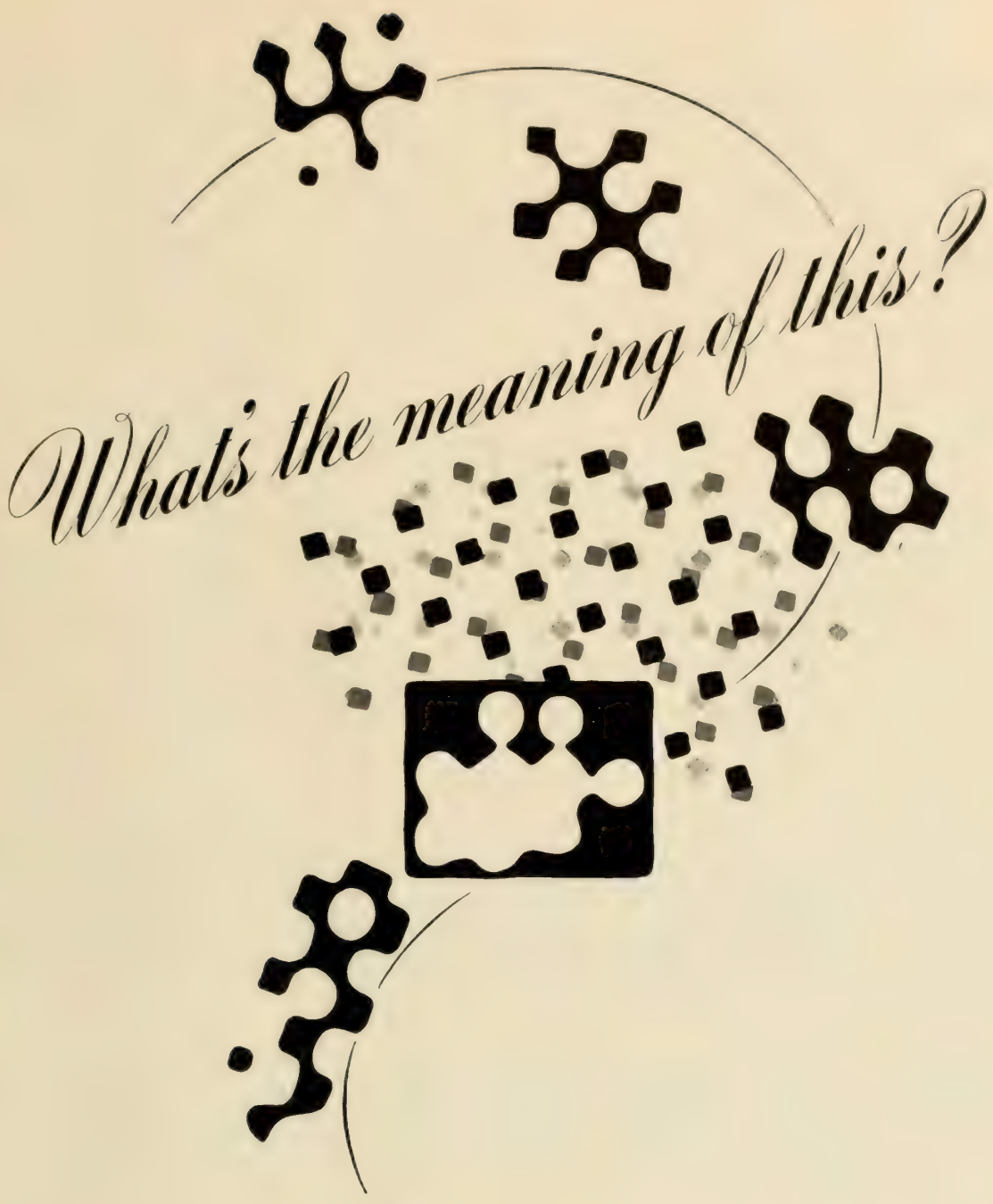
A low grade enamel offers difficulties when used as a substitute for a higher grade sheet. The most pleasing copy obtainable should be selected and prepared. All flat, gray, and off-color photographs, and those with muddy shadows that lack detail or have weak detail in the dark areas, should be culled out.

Retouching advice

A very good example of the latter is a picture of an interior of an office in which the legs of desks and chairs run into or are the same tone value as the natural shadows under them. These suggestions should be followed in purchasing art. Retouching and airbrush work should be smooth, and tonal distinction definite.

The national magazines have mechanical standards over which, fortunately, they are fussy. These standards are their findings after years of extensive study of the over-all production of finely printed publications. The stocks these magazines use are, for obvious reasons, the more satisfactory for producing printing from type and halftones of a quality equal to a job on a fine coated paper.

This has necessitated some special mechanical equipment and methods that may not be possible for the average quality commercial printing plant. But



These queer shapes are halftone dots picked at random from a magazine page and greatly magnified. Their construction and the depth between them determine the printing quality of the plate and the measure of fidelity to the original art from which it was made. Seemingly insignificant, these microscopic dots are the prime concern of progressive photo-engravers. You may be sure of their perfection in Sterling engravings.

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in their overall plan of production, the magazines pay as much attention to the selection of copy as to any other part of their work. If they have found it necessary and intelligent to carefully score the tonal values of copy for photo-engraving, all may well adopt this plan.

The best grades of gloss coated papers, as well as dull coated stocks, are too scarce and costly today for anything but a fine quality job. In planning such a job on these stocks, tonal distinction in the halftone copy is as important as their other qualities, and 133 or 120 screen should be used.

Now a word about the etching depths of halftones. Depth alone is not sufficient in a halftone to insure its printing a clear, clean reproduction of the copy. Tone separation is just as important.

Tonal separation or distinction is a quality in a picture that makes shadows transparent, with every detail clear. Tonal distinction is that fine quality in the middle grays that give sharpness and detail to such subjects as fabrics, scenes, and some hundred other pictures. When illustrations do have this quality, they arrest the reader's attention immediately. Tonal separation in the highlights or light areas emphasizes definition and detail, such as in white materials and distant clouds. These qualities should be in the copy. They are represented by the scale of tones in the accompanying halftone, which has 10 steps or distinctly separated tones, the lightest being the paper stock of this page.

Some tonal loss

There are many more tones of gray; every black-and-white illustration has some. If the copy is good for reproduction purposes, the tones will be well separated. If the copy has these qualities, the engraver and printer will preserve the majority of them in the halftone reproduction on the printed sheet.

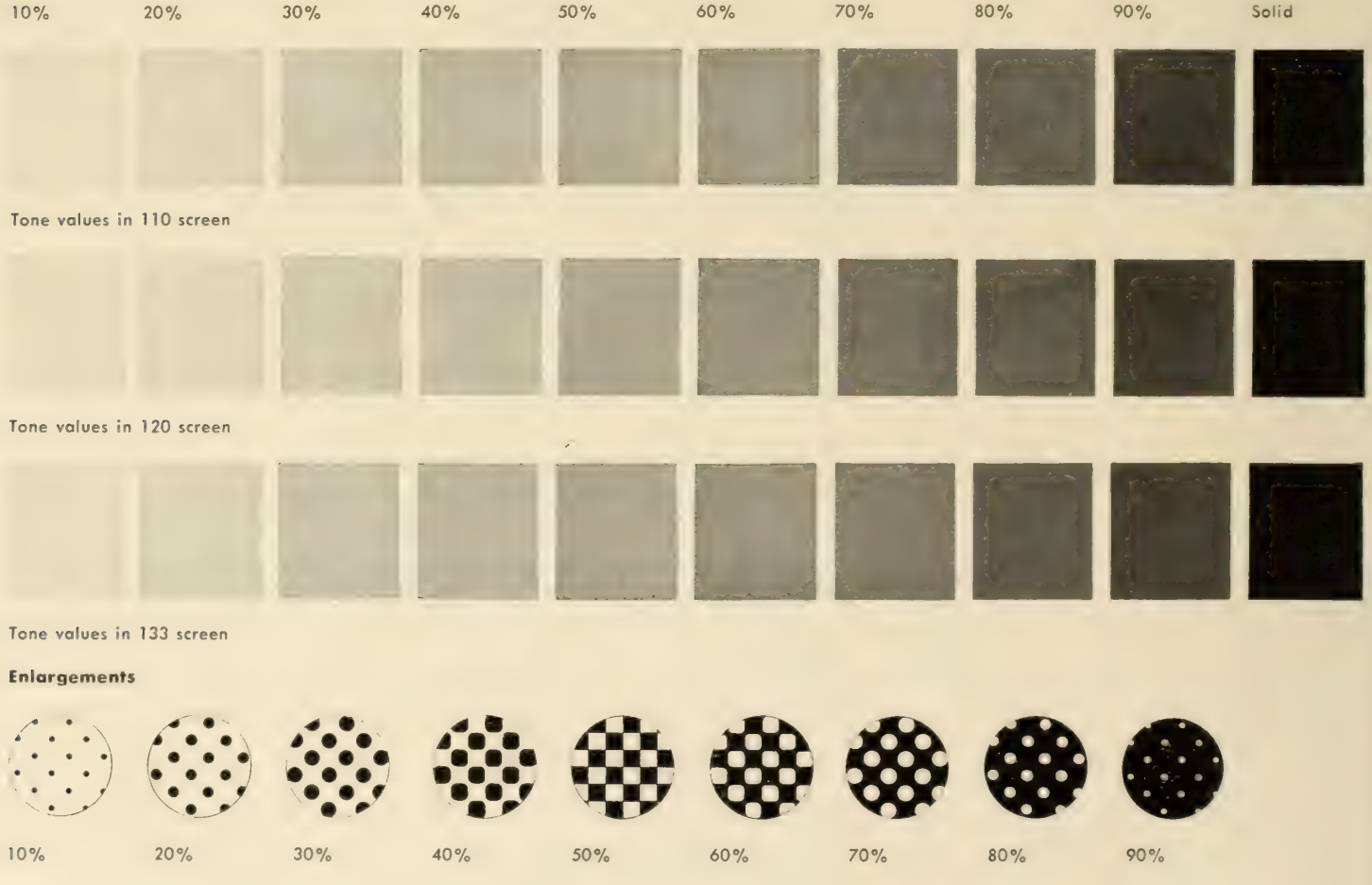
There is some loss of tonal separation in the reproduction of each gray tone of the copy in the halftone screen and printing processes. This may be said of all processes of reproduction by printing.

The copy should have strong detail, particularly in the dark and light areas, which are the parts that are prone to flatten out. If the copy has good tonal separation, the engraver can preserve and accentuate in the halftone those tones that are most vulnerable to filling up, so that under production conditions in the press room, satisfactory and pleasing printed reproductions can be turned out.

The quality and purpose of copy should be studied from the angle of its value for reproduction purposes. The engraver and printer should be consulted frequently to enable the buyer to learn the practical limitations of illustrative printing. These suggestions are not disregarded by those who produce the beautiful examples of pictorial printing that readers admire and frequently clip for their files.

If these suggestions about copy for photo-engraving are followed, "Your story in picture will leave nothing untold," to quote a very old and apt saying widely used in the graphic arts.

Screen density comparator





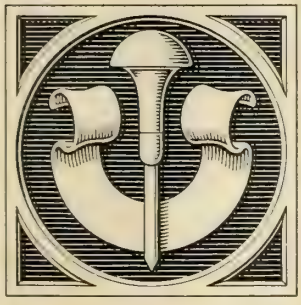
If you are a user of photo-engravings, you will appreciate the advantages of purchasing your plates from a concern that operates its own presses. We know, from experience in our own pressroom, what must be put into a plate to make it print and faithfully reproduce the original copy.



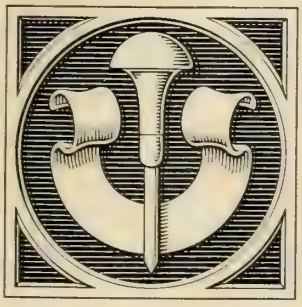
If you use letterpress printing, you will appreciate the advantages of purchasing your printing from a concern that operates its own engraving plant. Expert finishers are always on hand to make necessary plate corrections so that the printed result matches the progressives.



If you are a user of sheet-fed gravure, you will appreciate the advantages of having your plates made and printed under the same roof. The craftsmen employed in engraving the plates work hand-in-glove with expert pressmen—a combination that provides the finest printed result.



If you are planning the production of printed pieces, you can be assured of the best result by letting us design it, engrave it and print it, in either letterpress or sheet-fed gravure. There can be no excuse for poorly executed work when the responsibility for that work rests with a single organization.



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Non-reproducible copy

Copy with wide range of tone values, tones subtly blended together, or with delicate or closely spaced lines is the most difficult to reproduce well

Richard Gould

A year or so ago, there appeared in The New Yorker a cartoon of two men in conventional convict attire, working on a rock pile.

"Why you here?" asked one.

"I perfected a new engraving process," said the other. "Oh, well," he continued, "perhaps I should not say *perfected*."

There, if you please, is a clue to the difference between reproducible and nonreproducible copy. Technically, it boils down to the characteristics of what engravers and printers call "solids" and "tones" as discussed in detail below.

Solids and tones

In terms of printing ink, a solid is the most completely intense value that can be produced with any one ink. If the ink is black, a solid of it will be equally black. If the ink is gray, a solid of it will be equally gray. Colors work the same way.

It is not a question of how dark or how light the effect may be; rather, it is a matter of applying, mechanically, to the surface of a sheet of paper the maximum intensity of which the ink used is capable of producing.

A tone, on the other hand, is a value that looks lighter than any solid that can be produced with the same ink. There are two ways to make any ink look lighter than its solid value.

One is to print dots, grains, lines, or other forms sufficiently close together so that the total of their individual values is seen combined with the white or other color paper, rather than the size or shape of each dot. While each dot, grain, or line may be an individual solid, the spaces between them permit, as has been said, "paper to become part of the picture." This is the principle that is used in the printing of both letterpress and lithography.

The other method is to use a translucent ink and print it in a manner that will produce a thinner ink film in the light parts and a thicker film in the darker tones. This is the principle used in gravure. In this process, the plates are made with intaglio dots etched into the surface to act as ink cups or cells. They can be made so that some cells are deeper and others shallower; this is what makes it possible to vary the thickness of the printed film of ink, with consequent variation in tone in the resultant reproduction.

There are innumerable ways in which "tones" can be given to copies. Paint can be mixed with white or some other lighter pigment; dilution will produce the same effect. Tonal variations produced by either of these two methods are apparently continuous. The microscopically small grains of the pigment are so fine that the eye does not recognize the individual granules and "sees" only a tone. When these grains are packed so closely together that no paper shows between them, the effect is that of a solid.

Tones such as these can be simulated so closely, by the use of a halftone screen to create printing dots, that the effect is a faithful reproduction, provided that the area of these tones is not smaller than the area of the dots that are to be used in reproducing them.

Fine line copy

A difficulty of this nature arises when a copy has "tone" lines that are narrower than the dots produced by the screen. If a line is .01 of an inch wide, it cannot be even approximated if the width of each screen-made dot is .02 of an inch, as in some newspaper plates.

When it comes to the question of "reproduction," a line having an effect of continuous tone will not be faithfully reproduced with dots, regardless of their sizes; it will be simply approximated, by means of a printed dotted line. For this reason it is often necessary to make combination plates to best reproduce both solid and tone elements of the copy.

Another difficulty is that some lines not only have tones, but the tones vary; one end of the line, usually the lighter end, will fade off to a sharp point. If the thickness of this tapered tone line is less than the width of the dots, it will not be reproduced.

Shaded, tapering lines are characteristic of steel and copper engraving, of which United States paper currency is typical, which makes it understandable why "reproduction experts" generally wind up in prison for counterfeiting.

Stippled copy

Tonal effects in copy made up of stippled dots or grains produced by dry brush and crayons on rough paper can be satisfactorily reproduced by the line process, provided that the grains all are solid and black on white paper, and also provided that in the final reduction, these grains are not brought too close together. When this happens, a screen must be used to simulate the tones of the copy, but the reproduction will not be accurate.

There is a widespread feeling that if the job is a "line plate" it can be considered fool proof. The truth is that, regardless of name, if the lines or grains of a line plate are too close together to permit of etching to suitable depth, it will turn out just as badly as though a screen of too fine a mesh had been used.

Basic faults in nonreproducible tone copy are too many tones, or tones too subtly blended. Basic faults in nonreproducible solids or line copy are lines too fine or too close together. For a demonstration of good and bad copy, particularly as applied to newspaper reproduction, see Page 80-A.

The many art media employed today require that the production man know what plate-making technique is best suited to each and whether the copy lends itself to most faithful reproduction at all. The chart on the following page contains a list of the more widely used art techniques, recommends the most suitable method of reproduction, and suggests how to analyze the copy itself for suitability for reproduction to attain the most perfect result possible.



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Engraving media for art work

Most satisfactory engraving methods to use to obtain best possible reproduction of 21 widely used black-and white art techniques and 8 kinds of color copy

Jack Koehler

Art technique or medium used	Most satisfactory engraving methods	Unsatisfactory engraving methods	Technical comments
Pencil, charcoal, pastel, chalk, square stick, or lithographed pencil, when used on stock having a fine "tooth."	Highlight or regular fine screen copper halftone for coated or good super stock. Coarse screen used for newsprint, but loss of detail, lessening of contrast will result.	Line engraving unsatisfactory for reproducing fine, closely spaced lines. Line engraving "drops out" all but the black and white, and thus gives hard appearance.	If technique is bold, and on rough stock, line engraving gives sufficient separation. If printing is on rough stock, offset or sheet-fed gravure processes give best results.
Pen and ink, wood-cut style, scratch board, or reverse drawing, or black crayon on pebbled board.	Line engraving on copper for very fine work. On zinc where work is not extremely fine in shading.	Halftone unsatisfactory as it "breaks up" solid blacks with screen. Screen often forms patterns that change visual effect.	If electro, stereo, or mat is to be made eventually, it should be specified when original plate is made, so that engraver will etch to proper depth. If art work is to be reduced considerably, lines should be sufficiently spaced so that they do not "close up."
Dry brush, airbrush, wash drawing, or any continuous tone medium.	Highlight or regular fine screen copper halftone on smooth paper; coarse halftone on newsprint.	Line engraving will not reproduce tone values.	If use of dry brush produces solid black stippled dots, line engraving can be used, if not too fine.
Water color or oil painting to reproduce in black or white.	Highlight or regular fine screen copper halftone or smooth paper; coarse halftone on newsprint.	Line engraving will not reproduce tone values.	In most cases, color filters are used to preserve tonal values of original. It is advisable to make color-corrected velox print (orthochromatic or panchromatic negative) and restore tone by retouching before plate is made.
Combination line and "flat" tones (i.e., tones that have no gradation of value).	Line engraving used with halftone screen tint negative, Ben Day, or other shading medium for flat toned areas.	Halftone overall is unsuited as it would screen the line work. Line engraving alone unsuited unless tone is on original art work in screen or grain tints.	Blue or red guide line on art work should be used to indicate areas in which engraver is to insert screen tint or Ben Day. Elements in same focus should be assembled to save cost.
Print from "dry point" or acid bitten etching.	Where lines and tone effects (as in mezzotint) are fine, a fine screen copper halftone is used.	Line engraving unsuited unless technique is quite bold and simple and contains no grays.	On newsprint or rough stock, coarse screen halftone only should be used. Contrast and tonal separation should be accentuated in art work, since stock and coarseness of screen will "flatten out" contrast of art work.
Photograph, photomontage.	Halftone: Coarse screens for rough papers; fine screens on copper for smooth papers.	Line engraving will not reproduce tones.	If reproduction is to have soft or vignetted edge, art work should be so prepared. This minimizes possibility of a hard edge.
Colored drawings, water color and oil paintings, colored photos, color transparencies (Kodachrome, Ektachrome, Ansco Color), crayon or pastel drawing (to be reproduced in color).	Two-, three-, four-, five-, etc., color process, depending upon nature of copy and fineness of work required.	Line engraving will not reproduce tones, but line negative can be combined with the halftone negative in any color for reproducing type or decorations.	Tints and Ben Day may be used for special effects in conjunction with color process plates. If plates are to be used on high speed presses, fine line register of lettering in more than one color should be avoided.
Drawings using solid color areas or shadings done with lines or dots.	Line engravings for each printing color will produce a great variety of tones by overprinting of areas, either solid or shaded, to different degrees.	Halftones unsuited, as they break up or screen the solid areas. Color indication should be on an overlay. Colors in the original will require color separation, at added cost.	Best method of art preparation is black and white "key" drawing with color overlay. Example: Sunday comic sections do not overprint more than two solid, near-solid, or dense colors, because printing ink will not 'trap".

Special notes: Engraver should not be expected to put anything in hard metal that has not been put into the original art work. Art work to be reproduced with coarse screen must have contrast. Newspaper plates must be etched deeply. Art work prepared with bluish wash will photograph lighter; that prepared with brownish wash will photograph darker. Art work for two-, three-, or four-color process must have variations of only four basic colors. A chrome-yellow auto cannot be faithfully reproduced in same set of plates with a lemon-yellow sweater, unless two basic yellows are used.

Engraver's proofs

Proofs are a reliable index as to just how a plate will print only when pulled in strict adherence to printer's specifications for paper, ink, etc.

Harold M. Comstock

There was a time, long ago, when engravers pulled their proofs on heavy coated paper, with hand presses, using ink in porcelain jars, costing $5 a pound. Such proofs were not in any sense helpful to the printer; rather, they were a sort of challenge. They seemed to say: "Try to duplicate this, if you can!"

This has changed, and engravers now recognize the fact that the pay-off, for them, is the way the plates print, not the way they proof.

Every engraver who is proud of his skill and recognizes his obligation to the printer will first require detailed specifications as to paper, ink, and kind of presswork to be employed, before he even will consider starting on any job.

For use on newsprint

Paper is the primary item. Newsprint requires open screen halftone, 50, 55, 65 and, infrequently, 85 lines to the inch. If the subject to be reproduced is light in tone, the screen can be finer than if the tones of the copy are dark. Copy tones that are too dark can be corrected by hand re-etching on the plate to open them up. The purpose of this opening-up operation is to obtain more nonprinting depth and to avoid the tendency to fill up. On newsprint proofs, a watch should be kept for tones that are so dark they will fill up and obscure shadow detail.

If the copy is line work, lines that are too close together should be either re-etched or cut out entirely. Regardless of what name is given to a plate, line, halftone, or Ben Day, the space between either lines or dots should be wide enough to be etched to proper depth. For examples of good and poor copy for coarse screen work see article "Copy for newspaper reproduction" appearing on pages 80a-80d.

If any plate is made for newsprint and proofed on some paper other than newsprint, it should be reproofed on newsprint.

Delicate, subtle tone gradations should be avoided in newspaper halftones. If they seem to run together, they should be marked to be re-etched to "get more separation" so that tones and details will print distinctly.

It should be borne in mind that the ink used for newsprint is very fluid; it must be because of the high press speed. It lacks the density of proofing ink, so the crisp blacks of the proof should be discounted. Rather than attempt to make them darker, the worker should seek to obtain the required contrasts by making other tones lighter. Proofs should not be pulled with genuine newspaper ink; it does not work well on any type of hand proofing press because of the relatively slow turn-over.

If any area of a newspaper plate has been vignetted, even though the "fade away" may be exquisite on the engraver's proof, it will have when printed a hard, dirty black edge. Attempts to overcome this by ordering the edge of the vignette re-etched or the hard edge trimmed off rarely work. The safe way is to avoid vignettes in newspaper halftones.

Whites can be cut out or dropped out by deep etching, but they are effective and good practice only when bordered all around by definite lines or shapes where a hard edge will do no harm, even if it does show up. It is quite all right to cut out the white shirt front of a man in a dinner jacket, but it is wrong to cut out the highlight in his forehead. A dirty black line surrounding this open space will make it look almost exactly like a patch of adhesive plaster.

The lightest possible screen areas in newspaper halftones will almost always be somewhat darker than the corresponding parts of the copy. Re-etching the dots to make them print lighter may result in a poor printing plate. Dots that are etched to needle-point fineness have a tendency to punch into the paper and print darker because of the ink taken from their sides. Also, in re-etching to this fineness, some dots may chew away.

Persons who specialize in "spot" marking should make sure that the defective spots are really in the plate. Black spots often are in the paper; the reverse side should be checked, or two different proofs of the same plate should be compared. Spots that repeat, always in the same position, are usually in the plate and should be cleaned out. White spots can be analyzed by comparing two proofs. Sometimes flocks of dirt on the plate will cause them, but not in identical spots.

When in doubt about the "printability" of any newspaper halftone, it is advisable to get several proofs carrying a maximum amount of ink and plenty of printing squeeze. Another pair of proofs with the least possible amount of ink that will make a picture offer a good basis for comparison and analysis. Newspaper plates should be proofed with no makeready, for they get none on the press when run.

Engravers are often blamed for not reproducing all values of some copy that is basically unsuited to newspaper printing. The fact that they have not followed copy, but have made a good printing plate instead, is a pretty fair indication that they are looking after the interests of their client, in terms of good printing. Insistence that copy values be matched in the engraver's proof may spoil what has started out to be a good job.

Machine finish paper

The next better grade of paper in general use is machine finish, or M.F. It is soft and somewhat spongy and will take halftones or line plates of a fineness of 85-, 100- or sometimes 110-line screen. In general, the things to look for in the plates made for this purpose are about the same as for newsprint.

Plates of this screen fineness are always deep etched by what is called "powder bites" and, as they are almost invariably electrotyped, great care should be exercised to be sure they have no undercut in etching. This fault, if it exists, cannot be discovered in the proof; examination of the plate itself is the only absolutely foolproof way to discover undercut dots in a photo-engraving.


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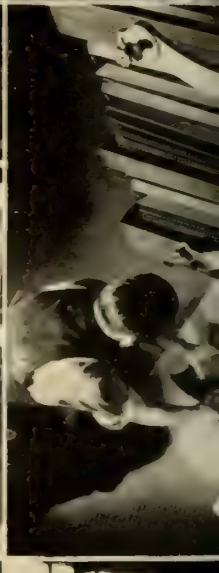

One of the Color Cameras

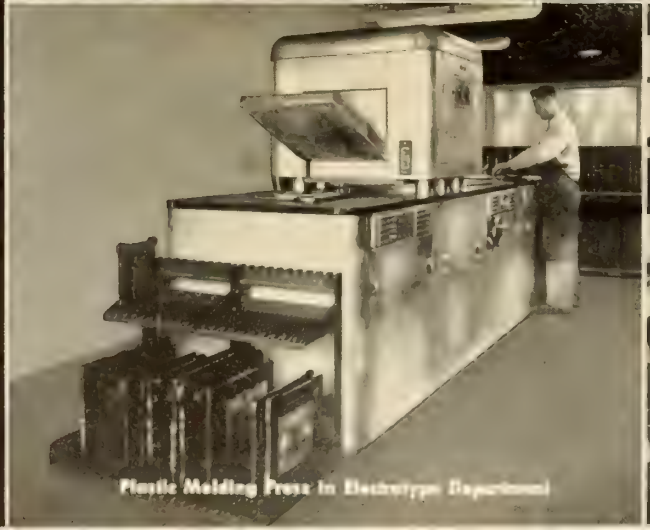

A Corner of the Color Proofing Department

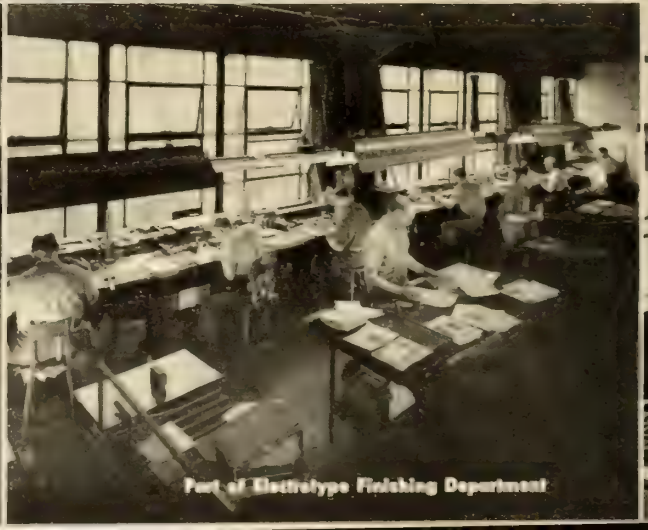


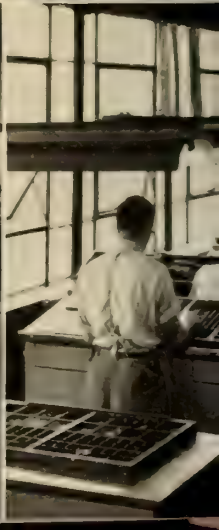

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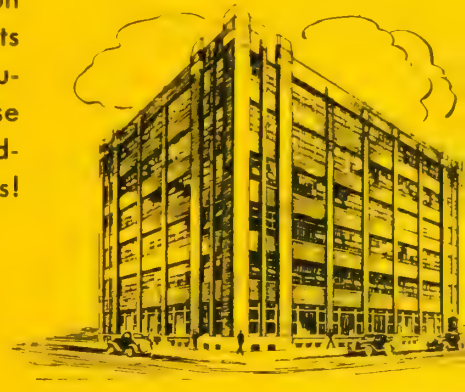
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Overetching of extremely fine highlight dots is another fault, but this can be caught by careful examination of the proofs. Missing dots is one symptom; another is a white, narrow halo between a very light tone and a surrounding darker area. Plates with this fault should be scrapped and made over.

Not infrequently, large areas of perfectly smooth gray tones, produced by what is known as a "halftone tint," may appear to be very mealy and uneven. Before condemning the plate, it is well to get a proof of it on the best coated paper. If the same faults appear in this, it would indicate that the trouble is with the plate. If not, then it is probably caused by the paper.

When this effect is evident, the sheet should be held up to the light, and if there are dark and light spots in it that looks like curds in sour milk, the paper is doing the damage. Darker spots that show up in this test are thicker areas of paper pulp; light spots between or around them result from thinner pulp. This variation in paper thickness and hardness creates uneven printing pressure on the inked dots and a mealy tone results.

M. F. paper is nearly always used in web-fed high-speed presses. The ink is nearly as fluid as that used for newsprint; curved electros are used, and there is no makeready. A fool-proof "separation" of tone values is essential in plates for this kind of printing, with especial care that there be no needle-point dots as well as no overetching.

Supercalendared and coated

Supercalendared and coated papers are relatively easy to make plates for. Actual copy values can be sought after, but on some grades of super, mealiness in flat tones may appear when the paper pulp is not of uniform density. The test against the light is in order in such cases.

Plates especially made for either newsprint, M. F. or super paper should be proofed on the stocks for which they were intended. A plate to be used on M. F. will appear lighter if proofed on coated; if made for coated and proofed on M. F., it will be darker. The rougher and softer the paper, the more ink and pressure are required to print the plate.

Any plate having relatively large solid areas, proofed with stiff, tacky ink, is liable to cause what are called "picks" when run on heavily coated paper. The ink is so tacky that when the coated paper is removed from the plate, little pieces of coating "pick" from the paper and stick to the plate. A comparison between two or more proofs will show whether the fault is what it seems to be, or is the result of defects in the plate.

Color proofs

Color work, especially color process plates, should be proofed in exact conformity with the printing requirements. In publication work, the magazines supply not only the paper but also inks for proofing. Their specifications, particularly in reference to color rotation, wet and dry printing, and ink distribution, should be followed precisely.

Color plates that are proofed "dry," that is, with drying time allowed between colors, will appear much softer and less contrasty if they are printed "wet," or with only a fraction of a second between impressions. Conversely, soft effects obtained under wet proofing conditions will be translated into sharper, snappier contrasts if they are printed dry.

While in the last analysis perhaps the key factor in obtaining color proofs that will reliably represent the finished result depends greatly upon the intellectual honesty of both the engraver and the production man, considerable technical progress has come to their aid in recent years.

Improved proof presses especially designed to pull four-color wet proofs, and improved controlled lighting for viewing copy and proofs are two examples of the technical advances made. However, the best of equipment is of little avail if the proofs are pulled with the object of "selling" the client the best looking proofs, instead of adhering rigidly to the mechanical specifications of the publication that will have to print from the plates.

Process color work requires a precise adherence to the principles that make possible the reproduction of a great variety of hues, but using only yellow, red, blue, and black to do it. Skillful color finishers in photo-engraving shops know these principles. Artists and art directors need to know them to most intelligently mark a set of color progressives for color correction.

It is not merely a question of color theory that is involved, but also a problem in manufacturing the printing plates. The art director should know not merely what colors should be reduced or increased, but just how much it is physically possible for the platemaker to perform the desired corrections, and at what possible sacrifice in time or cost or even quality such corrections can be made.

There is no actual color dilution in letterpress color plates. The ink of any color has the same strength in the highlight and the shadow areas, but the tone effects vary because of the amount of white paper that is permitted to show between the printing dots.

Not infrequently, someone will look at a set of progressive proofs and be quite dumbfounded to see the strength of some single color in an area such as a face or an arm.

"Reduce this red" may be the edict. The fly in this ointment is the fact that a reduction in the red may allow the yellow, blue, and black to come through more, and the consequence may be that instead of improving the flesh tone, the correction may make it green.

Unless the critic is extremely well informed on the subject of letterpress color plates, it is much safer to mark the proofs so as to tell the engraver what is wanted, rather than how to do it. It is a good plan to figure that a reduction of printing intensity of any one color will permit the other colors in the same area to become more prominent.

Passing proofs of plates made for wet printing requires a particularly careful analysis of the progressives. The total intensity allowed by most publications using this process is usually not more than 200 per cent, and with no absolute solids. (For further information on this subject see the article on "Wet Printing" in the Printing Processes section of this book.) When approving or correcting proofs for this kind of work, the requirements and limitations of the process must be borne in mind.

It is hardly possible to give specific details for color intensities that can be applied to any overall color schemes. Each different piece of copy may require different treatment, especially in relation to color rotation and drying time between colors.

Because of the peculiarly exacting conditions under which color plates have to be printed in publications, there is a need for the closest possible teamwork in production. The publication printer works under such definitely fixed specifications that he can do little to help improve the reproduction of the material supplied to him. It is up to the artist, director, engraver, and production man to supply all of the correct material.

Screen patterns

Production men should know causes of screen patterns in single and process color work and the reasons for using different screen angles for each of the colors

Robert Hamilton

Screen patterns occur occasionally in both black-and-white and multicolor photo-engravings. They detract from the quality of the illustration and should be eliminated wherever feasible, or reduced to the greatest possible degree.

Primarily, this is the job of the photo-engraver, but the production man should be able to recognize when there is an undesirable pattern in his plate and to know how to avoid or minimize it.

The plate probably has "screen pattern" when there appears to be superimposed on the picture mechanical designs such as lines, crosslines, checks, honeycombs, etc. When such a pattern becomes so obvious as to draw attention to itself in competition with the subject illustrated, or when it causes certain tone contrasts or details in the reproduction to be obscured, the pattern is definitely objectionable.

Usually the only thing to do is to remake the plate, unless the objectionable pattern is confined to a small area and can be reduced by hand tooling. However, the photo-engraver's judgment as to whether the pattern can be reduced should be heeded, as a remake may only result in an equally bad plate.

Causes of patterns

Patterns in the plate are caused by a variety of elements. Most common are faulty inking in color work and improper screen angles. It is with the latter that this article deals. The superimposition of two or more halftone images often will create a moiré pattern in the plate. To some degree, the extent of the pattern can be controlled by varying the screen angle.

Screen patterns also occur when making halftones of wood engravings that have fine shading lines, steel engravings, and such fabrics as rubbed silk, like the bands on a hat.

The pattern, being the result of two or more halftone images superimposed upon each other, will occur in multicolor halftones and when the copy for a black-and-white illustration already has a screen in it, as when reproducing from a halftone proof. With regard to the latter, it is best to reproduce the illustration as a line cut, if at all possible.

To understand the effect of rescreening screened copy, the following experiment might be visualized: Compare a good proof of a halftone plate and a glassine proof of a halftone screen. The halftone proof is perfectly satisfactory when viewed alone, but when viewed through the glassine, the double screening obscures tones and details.

If the glassine is rotated on its imaginary center point, it will be noticed that at certain angles the net result is worse and at other angles is better. In principle, this is what the photo-engraver does to minimize inevitable patterns, although from his previous experience he knows just what angles to use if he is to obtain the best possible results.

Screened copy

If a halftone has to be made from screened copy, the photo-engraver should be requested to minimize the patterns as much as possible. He will then rotate the screen in his camera so as to print the dots of the original and the new dots made by his screen in such a relation to each other as to minimize, if not entirely eliminate, the resultant pattern.

In process color work, the screen, usually circular, is rotated to a different prescribed angle for each color. The farther away from another the screen can be rotated in terms of degrees, the less the likelihood of a moiré.

Screen angles for color

As for the screen angles of the different colors on a four-color process job, the black remains the same as on a single color job; that is, at 45°, as in Figure 1. The red is at 75° as in Figure 2. The blue is at 105° as in Figure 3 and the yellow is at 90° as in Fgure 4, all within the necessary 90°.

If a circle is drawn on a four-color process print and pencil lines then drawn in both directions across the print showing the screen angle for each color, the lines will cross the outer edge of the circle.

The purpose of this screen arrangement is to take the three strong colors, black, red, and blue, and space them as far apart as possible, within any 90°, which is 30°—the black at 45°, the red at 75°, and the blue at 105°.

Strong colors separated

It will be observed that the same spacing of these three colors naturally results the whole way around the circle. This is the greatest possible spacing between these three strong colors, because each color has four lines emerging from the circle, and since there are three strong colors, there are twelve such lines and twelve divisions of the complete circle, permitting only a 30° spacing (360° divided by 12 equals 30°).

This point is stressed because there have been published articles recommending a greater screen separation. For example, in one case a separation of 60° was recommended for all four colors. This would not be possible because there are only 360° in a circle, and four colors always mean sixteen divisions (four in each 90°), with the result that the best equal spacing that could be obtained for four colors would be 22½°.

In placing the strong colors at 45°, 75°, and 105°, respectively these three strong colors simply are given equal separation and the fourth color, yellow, is placed between the blue and the red, which means that it is separated from those two colors by only 15° on either side. This acute angle will make a pattern with the color closest to it, but it will be covered up when the other two colors are printed.

It is important to keep these simple facts in mind: First, the greatest possible equal separation of screen angles for three colors is 30°; for four colors, 22½°. Second, the common practice for four-color plates is to separate the three strong colors, black, red, and blue, 30°



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and then place the yellow between the red and blue.

Getting back to the patterns, start with a pattern in the halftone screen of each color. When two of these screens are crossed, all kinds of patterns can be and are formed, regardless of the separation between the screen angles. The slightest change in screen angles sometimes will make considerable difference in the pattern. In general, however, the widest possible separation of strong colors is preferable, because it produces a less objectionable pattern than when the screen angles are closer together.

Overprinting colors

Another important element in the formation of patterns when two colors are overprinted is the nature of the screen being overprinted. For example, a 75 per cent solid being overprinted with a 25 per cent tone frequently produces a more noticeable pattern than overprinting other tones, because the 25 per cent dots of the one plate will at some places fill the complete 25 per cent openings in the more solid plate.

Then, as the screens cross, the 25 per cent dots cross the screen angle of the more solid print completely uncovered. 25 per cent dot prints directly over the other color, leaving the opening in the more solid print completely uncovered.

Thus, in certain areas, the dot of the light plate prints in the opening of the more solid plate, and in other areas these openings in the solid plate are completely uncovered. At equidistant areas in both directions there are groups of dots in the solid plate completely covered with the second color, and in other similar areas these dots in the solid plate are completely uncovered.

Most prevalent patterns

Patterns from this origin come most frequently in the greens and oranges, the green being formed by yellow and blue, which are only 15° apart, and the orange being formed by yellow and red, which also are separated by only 15°. If these colors dominate, then it always is best that the advice of the engraver be sought.

Patterns do occur between other colors and sometimes on three or four colors. In fact, the patterns are always present, but the complaint arises only when those patterns are so noticeable that they become objectionable and detract from the finished reproduction.

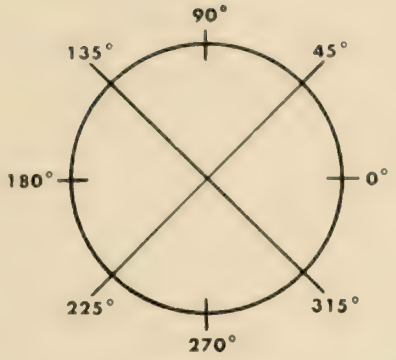


Figure 1, Black

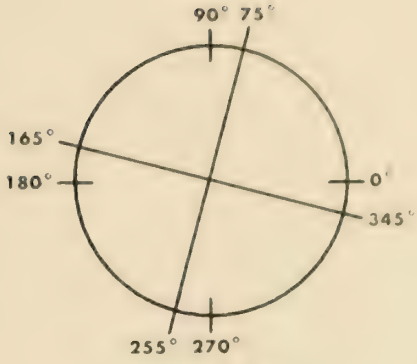


Figure 2, Red

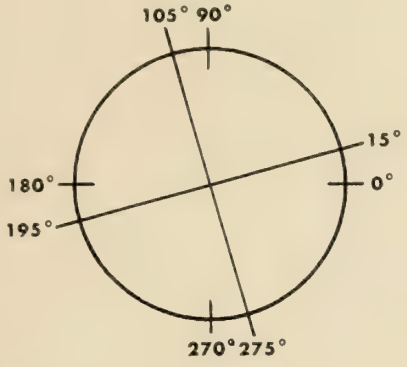


Figure 3, Blue

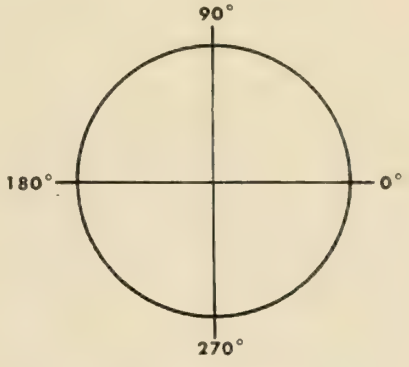


Figure 4, Yellow

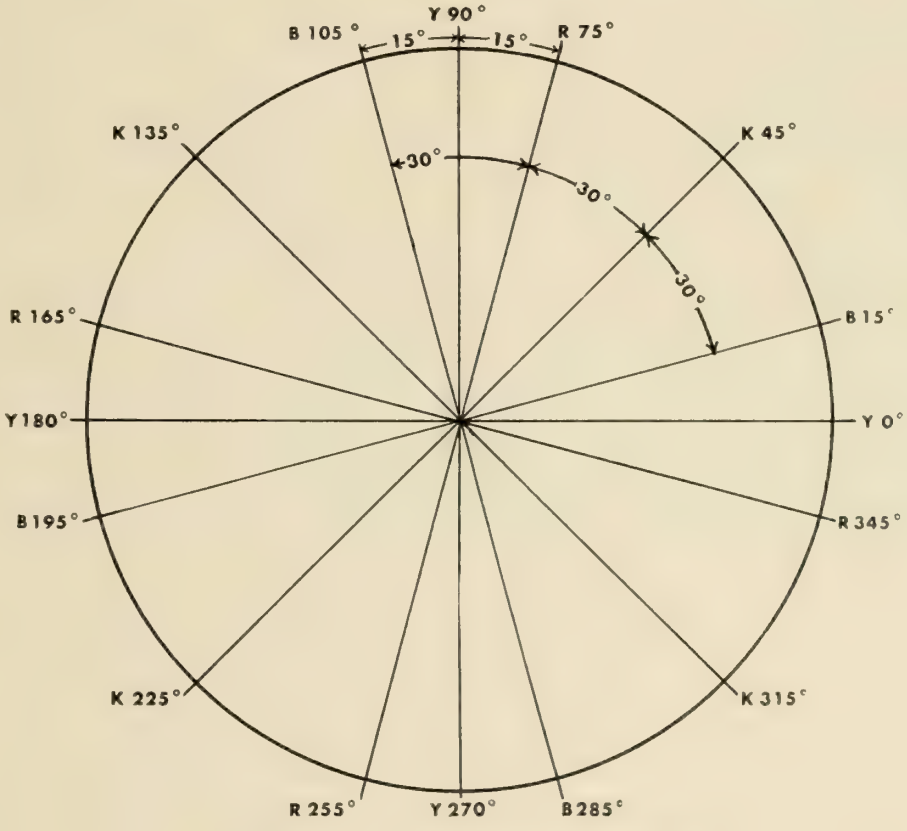


Figure 5, Y-Yellow; R-Red; B-Blue; K-Black

Combination and highlight effects

Drop-out and line effects in halftone reproduction obtained by new processes which are designed to accomplish object speedily and at minimum cost

Walter M. Kelsoe

Potentially interesting but too new to accurately evaluate are several new techniques that claim to make possible the manufacture of a combination line and highlight halftone without making extra negatives, stripping, inserting, etc. They are produced more speedily and at less cost than by conventional methods, with only minor changes in copy preparation and photo-engraving technique.

At present, tone copy is normally reproduced with a screen overall, and extra steps or special processes must be used to obtain drop-outs or solids in regular halftone copy.

The basic techniques described in this article can be used in either photo-engraving or photolithography. Before methods of dropping out, silhouetting, retaining solids, etc., are considered, the following basic facts concerning the production of a conventional screened halftone negative should be borne in mind.

1. The crossline screen in the photo-engraver's camera is between the copy and the negative material.
2. The purpose of the screen is to change the continuous tones of the copy into a series of dots.
3. There are always the same number of dots per square inch in any one plate made from any one screen.
4. Tone control and detail are achieved through varying the size and shape of dots.
5. The screen, although in the camera, is not in contact with the negative plate.
6. Its distance from the plate (screen distance) varies with coarse and fine screens—for the latter it is nearer than for coarse screens—and is controlled by the operator.
7. When the beams of light, during exposure, travel from the original to the negative plate, they must pass through the screen and jump the gap or screen distance to the plate.
8. In making this jump, the light rays tend to diffuse in proportion to the intensity of the ray. Light beams from pure whites, being most intense, will show the widest spread from the source.
9. The result is a variation in dot size and shape on the negative that is proportionate to the corresponding tone values in the original. This being a negative image, the light areas in the copy are represented by the largest black dots. A reversal takes place in putting the dots on metal, at which time the transparent spaces between or around the black dots of the negative become the black printing dots of the plate.
10. Even in what were pure white areas of the copy there are fine black dots in the plate; in what were solids on the copy there are fine white dots.

Thus, there is a screen overall. Very often, this is not objectionable, the light areas being so light in relation to the dark that the full effect desired is achieved. However, it often is desirable not to have a screen overall in the plate.

Velox

One method of eliminating screen in selected areas of the copy is to make an enlarged screened negative of the copy and retouch it as desired. (For details, see Cross-Reference Subject Index.)

Combination plate

Another method of obtaining both line and halftone effects in letterpress is the combination plate (usually at more than double the price of a regular halftone). This involves making separate line and halftone negatives and combining them. The line negative simply puts in solids where desired. To obtain pure whites the plate can be tooled out by hand, or highlight or drop-out effects can be achieved by the engraver's using a mask or decentering the lens diaphragm.

Masking

This is really a form of selective overexposure in which dots in the white areas are dropped out partially or fully, resulting in highlights or drop-outs in the plate. A celluloid mask is fastened to the edges of the copy. Areas to print are painted out in solid black on the mask, which is then removed and the regular exposure made. The mask then is put back in precise register, and the plate re-exposed.

This re-exposure causes the nonprinting areas to become overexposed, or all black in the negative, devoid of dots on the printing plate, pure white in the reproduction. Overexposure, if done all over without the mask, would have reduced tone values proportionately all through the subject. What actually happens is that light beams during the overexposure creep into the shadows cast by the screen on the negative.

Overexposure enlarges the size of the black (negative) dots, eliminating the white (corresponds to the printing surface on the plate) causing "highlight" effects. Longer overexposure causes the dots to overlap, obliterating the fine dots that would print, causing a complete drop-out effect. Pure whites and silhouettes can be obtained by this method.

Decentering diaphragm

Instead of overexposing and permitting the light to creep around the screen lines and into the shadows of the negative, as is done in the masking method, the screen itself can be moved to permit light to strike directly the portions of the plate formerly held in shadow by the screen lines.

This can be done by decentering the lens aperture with relation to the lens center for a secondary drop-out exposure or by oscillating the screen during the exposure.

Two methods that operate on this principle are the Sterling-Groesbeck adjustable diaphragm and the Bassani Process. A special paint that is sensitive to ultraviolet light is applied on the copy over the areas to be highlighted or dropped-out. Special ultraviolet lighting equipment in the photo-engraving or lithographing plant permits this area to be reproduced without using a screen.

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Fluorescent art

There are several processes based on the principles of fluorescence and filter control for obtaining highlight and drop-out effects. (For details on Eastman Kodak Fluorescent Process, see Cross-Reference Subject Index.)

Kromo-lite

This method of preparing and reproducing wash drawings is widely used in large newspaper plants. The artist makes his drawing in the same manner as he prepares a conventional wash drawing, with only one exception: he mixes a colorless solution called Hi-lite with the lampblack, instead of using water. The finished sketch looks just like the conventional wash drawing.

When the art work is received by the newspaper photo-engraving department, it is sprayed with Kromo-Lite Spray. The gray wash turns a greenish-yellow. Blacks and highlights remain, but the shading becomes a gradation of greenish-yellow instead of gray.

In making his negative, the photo-engraver makes two exposures. The first is through a special filter that neutralizes the yellow so that the negative has a screen overall. In the second exposure, which is through a different filter, the yellow appears to the camera as a solid black, thus protecting the screen already on the negative in that area, as the solid black will be a pure white on the negative. But the white or highlight areas of the copy will reflect light to the negative, thereby obliterating the dots and making that area of the negative solid black, producing an automatic silhouette and drop-out.



Kromo-lite: Note line, drop-out, tone effects.

For a combination line and halftone effect, it is necessary to use a line mask for the solid line effect; however, the line areas, even when screened, will be so much darker than the tone areas that in most cases the full effect desired can be achieved without using the line mask.

Fluor-a-tone

Wash drawing or airbrush work is prepared with a specially fluorescent material. The photo-engraver makes his exposure in the normal manner. A second exposure then is made through a filter: depending on the pigments used, a regular gelatin filter or a special ultraviolet filter may be used.

The filter is selective, and has the same effect upon the negative as the celluloid mask described above; it holds back light rays in the "normal areas," and permits overexposure in the highlight and drop-out areas to such an extent that the screen dots will close up solidly on the negative, become nonprinting areas on the plate, and appear pure white in the final reproduction. The principle of this technique is that through filter control, certain portions of the spectrum are eliminated.

Fluorographic

Copy is prepared with standard pigments using a fluorographic solvent in place of water, or with special pigments crayons, or pencils. The image area of the drawing then contains a fluorescent material, but that material is not present in the background or highlight areas.

The photo-engraver gives the copy two exposures, one in the normal manner, the other through an ultraviolet filter with which the screen is not used. The image area of the copy containing the fluorescent material absorbs ultraviolet light and reflects only visible light.

The background and highlight areas, where there is no fluorescent material, reflect (instead of absorbing) the ultraviolet light, causing the corresponding areas on the screened negative to be additionally exposed. This enlarges the highlight dots to the point of overlapping in the negative; they then drop out entirely in the positive or printing plate. Automatic silhouettes are easily obtained through the use of this process.

New screens

Fluorographic: These are employed in conjunction with fluorographic art described above, and based on the same principle, but instead of using a filter for a second exposure, the "filter" is built into the screen and only one exposure is necessary. The fluorographic screen looks like the conventional screen, but the screen lines, instead of being completely opaque, are opaque only to visible light, and are transparent to ultraviolet light. A combination silhouetted highlight halftone is achieved without extra negatives, stripping, inserting, hand work, doubleprinting, masking, etc. The screen is recommended by the manufacturers for use in everything from ordinary highlight halftones to involved highlight combinations. It can also be used for square finish halftones.

International Duplex Screen: This looks like the conventional screen but the line rulings are translucent. No special treatment of art work is required. Screen rulings are magenta or rose colored.

With the conventional screen, light rays bend and bounce off the opaque lines, and the resultant diffraction causes some dots to be badly shaped and to have fuzzy edges. The translucent lines eliminate this diffraction, and result in sharp, precise dot formation.

The screen is used in conjunction with two filters, a yellow, which causes the magenta color of the rulings to appear black, as in the conventional screen, and a rose, which cancels out the screen lines and results in a no-screen exposure.

By varying the proportion of the exposure through each filter, the camera man can control the tone of the reproduction, giving more life to flat copy or toning down over-contrasty copy.

Combination and highlight effects can also be obtained with the screen without shooting extra negatives, inserting, stripping, etc.

On the image (toned) area, there are the advantages of simplified tone control and sharpness of dot structure through elimination of diffraction. Highlights or drop-outs are obtained by opening the lens one-half stop and giving a specified exposure with a suitable filter.

For solids, the halftone portion of the copy is shot with the line copy masked. The halftone portion then is masked out and the line copy is exposed through the rose filter, which blanks out the screen. Registration of both the line and halftone negatives is precise and automatic.

Proportion calculator

Graph provides a rapid, accurate, pencil-free method for determining dimensions resulting from reductions or enlargements of art work or layouts

Edward M. Gottschall

There are several methods of calculating the measurements of a piece of art or a layout that is to be reduced or enlarged in proportion. These include a variety of slide rule devices, cellophane overlay scales, the camera lucida (lucie), use of photocopies, arithmetic calculation, and the diagonal line method.

Many art and production departments have a camera lucie. This is a simple device consisting of a lens and a copyboard. Copy to be rescaled is tacked on the vertical copyboard. The lens, which can be raised, lowered, or swung toward or away from the board, is adjusted until it projects the copy onto the table top in the desired size. A layout is often placed on the table top, and the art work is projected in the desired size onto the layout.

The artist then quickly traces over the projected image, thereby sketching the art work into the layout. At the same time, he can crop the art by sketching in only that part of it he needs or that part which will fit best. This sketch, if carefully made, is a reliable guide for sizing and cropping the art when sending it to the plate-maker.

While photocopies are often made to check the resizing of art work, they are more effectively employed when the layout man has already calculated the new dimensions and is using the photocopy to check the effect of the reduction or enlargement.

Proportion formulas

Arithmetic calculations are preferred by some production men, while to others they are tedious. To use this method, the art is first measured at its widest and longest points. If the copy is irregular in shape, it should be made certain that the extremes are used as the measuring points. When this method is used, one dimension of the desired cut must be known, either the width or the depth, so the other can be calculated.

For example if the art is 17 inches in width x 9 inches in depth and is to be reduced to 12 inches in width, how deep will it be? To determine the depth, the following formula is used:

$$\frac{\text{Depth of art} \times \text{cut width}}{\text{Width of art}} = \text{Depth of cut}$$

Or

$$\frac{9'' \times 12''}{17''} = 6\ 6/17''$$

If the same piece of art is to be made to fit an area 6 6/17″ high, and it is necessary to determine the width of the cut. above formula can be altered to:

$$\frac{\text{Depth of cut} \times \text{art width}}{\text{Depth of art}} = \text{Width of cut}$$

Or

$$\frac{6\ 6/17'' \times 17''}{9''} = 12''$$

When the diagonal line method is used. the art work should be considered as a rectangle, by projecting horizontal and vertical lines from the extreme points on each side, top and bottom. Then a diagonal line is drawn from the lower left-hand corner to the upper right-hand corner of the rectangle and is extended as far as necessary.

Any point on that diagonal represents the upper right-hand corner of the art (or its equivalent rectangle). To find the unknown dimension from it, simply locate the known dimension and measure off the unknown.

For example, if the art work referred to in the above illustration is 17 inches x 9 inches and is to be reduced to 12 inches in width, the depth of the reduced cut is determined by locating the point on the diagonal line that is 12 inches from the left-hand edge of the rectangle. and measuring down perpendicularly from that point on the diagonal to the base line.

If the depth is known and the width is to be determined, the depth is located on the left edge and the horizontal line measured across from that point to the diagonal.

In using this method, it is usually advisable to draw the rectangle on a tissue overlay of the art. In so doing. a soft pencil should be used and care should be taken not to press the pencil over the art in such a manner as to leave indentions that will show up in the reproduction. The same procedure is followed when the art is to be enlarged. In such instances, the diagonal is projected as far beyond the confines of the rectangle as the enlargement necessitates.

To make available to the readers of the PRODUCTION YEARBOOK a simple, accurate, easy-to-use device, the editors have prepared the Proportion Calculator on the following page. It is based on the diagonal line principle. Instead of having to draw a rectangle and a diagonal, the reader can regard the calculator as the rectangle by simply locating the points of intersection of the measurements of the art on the graph. Then a straight edge is placed from that point through the lower left-hand corner. This represents the diagonal line.

The new measurements can be found along this diagonal line by locating the known dimension on it and reading off the unknown exactly as in the diagonal line method described above. The calculator permits precise readings to within an eighth of an inch. Where necessary to calculate dimensions to fractions smaller than this the user can readily interpolate such fractions visually.

As an example, the problem used to explain the mathematical and diagonal line methods is worked out on the graph. The figures across the top, bottom, and sides of the chart represent inches. Art work to be reproduced up to the size of a full newspaper page or art work as large as a full newspaper page that is to be reduced can be scaled on it.

The chart itself is less than same size (24 inches being represented in 9 inches) but it is accurately proportioned so that it can be used as an accurate tool. For those who prefer to use the chart in full size, it is suggested that they make themselves an enlarged photocopy. In so doing, it should be borne in mind that this is a copyrighted feature and such reproduction is permitted for personal use only.



PHOTOGRAPHED BY ROBERT FRAZER BOGART

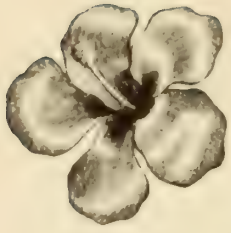
ENGRAVING *by* LOTZ

Native to Bermuda, the hibiscus is a flower of rare and startling beauty. Photographed by the Kodachrome process, and reproduced here in full color is a typical example of this Bermudian gem . . . a typical example, too, of engraving by



Lotz

THE LOTZ PHOTO-ENGRAVING COMPANY
12TH & CHERRY STS., PHILADELPHIA, PA.



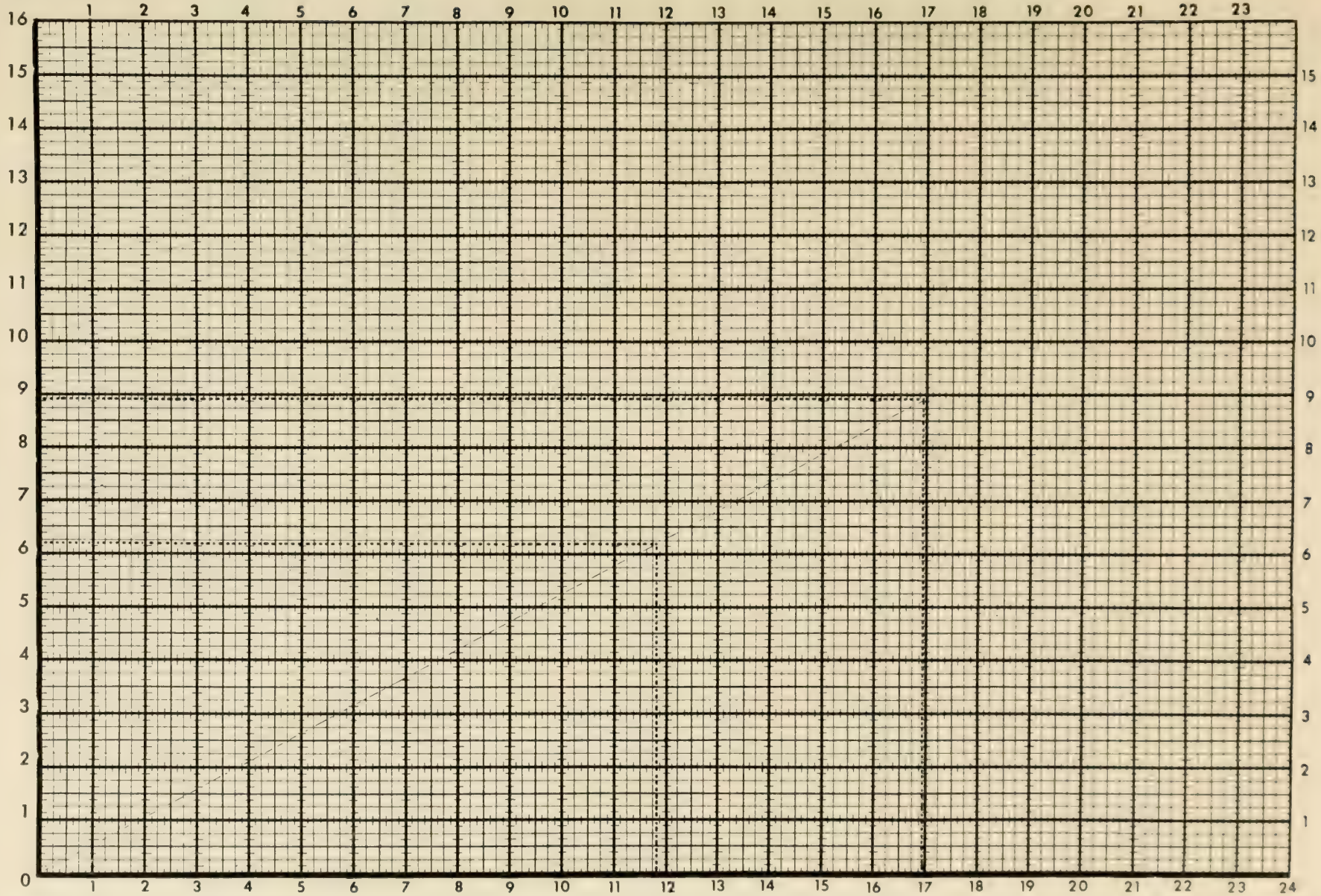
At the present time, Lotz is expanding and improving its facilities . . . enlarging its personnel . . . developing new, advanced methods of photo-engraving . . . to the end that Lotz will continue as a dependable source of supply for quality engravings. Whether you require 4-color process plates, a highlight halftone or a simple line engraving, you can be sure of high-fidelity reproduction by Lotz . . . thanks to complete, modern equipment . . . skilled workmanship . . . and conscientious attention to every detail.

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Proportion calculator, continued



Directions for use: 1. Measure extreme length and width of copy. 2 Locate point of intersection of these dimensions on graph above. 3. Place a ruler or a piece of string from that point through lower left hand corner of graph. 4. On the diagonal line thus created, locate the known dimension of the area to be filled. This point represents the upper right hand corner of the area. The unknown dimension can then be read off from this point to the horizontal or vertical scale as the case may be. Readers who prefer to use this kind of proportion graph in scale of 1" = 1" can make a photocopy of this page enlarging the graph to 24" x 16". Such photocopies must be for personal use only, as this is a copyrighted feature of PRODUCTION YEARBOOK. This graph was made to scale copy up to 24" x 16" so as to accommodate work the size of a full newspaper page as well as most large scaling jobs

Halftone screens

As finer screens are employed, details can be more faithfully reproduced but the relative tone values of a subject remain fairly constant

Stewart Haines

Light and shade in the things we see, whether these things are pictures or objects of three dimensions, result from the amount of light that is reflected by some areas, as well as the amount absorbed by other areas.

The reason for requiring both reflection and absorption is that the things we look at are illuminated with a full intensity of the light we are using to see by. No change in light intensity takes place until the phenomena of reflection and absorption begin to operate.

The factor that makes all this possible is that light is composed of millions or billions of separate waves; these can be reflected or absorbed in big or little groups.

We see only those waves that are reflected into our eyes, and the more waves we see in any area, the brighter that area will appear to be. If we read a page of type in bright daylight, just as much light falls on the black type as on the white paper, but the light that falls on the type never comes back; it becomes absorbed.

The purpose of the halftone screen printed on a sheet of white paper is to wash out and absorb certain groups of light waves in some areas and permit the white paper—between the screen dots—to reflect.

The features that control the amount of light either reflected or absorbed in a halftone reproduction are the relative sizes of the black dots and the sizes of the intervening areas of the white paper.

The photo-engraving processes make it possible to do this in a manner that will simulate the lights and darks of the original being reproduced.

Obviously, the areas of the printing dots as produced by the screen in the finished, etched plate should be held to size and intensity when printing.

If anything occurs to make printed dots larger or blacker, the pictorial values will be darker than we expect them to be. If the dots do not print evenly, if some become broken or defective, the effect will be lighter.

Because of variations in the surface smoothness of different grades of paper, it has been found necessary to have screens of different degrees of coarseness or fineness, so that every dot will be enabled to print, regardless of roughness of the paper surface being used.

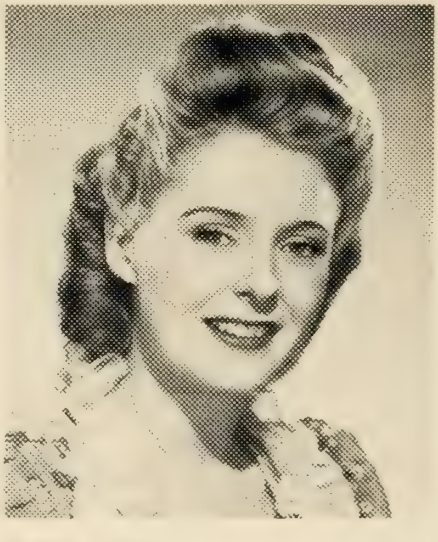
A 50-line screen produces a printing plate having 2,500 individual dots in every square inch; a screen of 120 lines gives 14,400 dots. The lesser number of dots produced by the 50-line screen gives the plate a much better chance to print properly on rough paper. When the paper is smoother, more dots can safely be used.

Tone values reproduced by coarse or fine screens do not suffer materially; it is possible to obtain similar relative shades of light or dark with any of the screens in general use, but detail suffers materially as the number of dots per square inch becomes reduced, because there are then fewer pieces with which to make the picture.

The accompanying demonstration illustrates how coarse and fine screens reproduce detail. In studying the coarse screen reproductions, the reader should bear in mind that they are reproduced in this demonstration on coated paper. The same illustrations, if printed on news stock in a newspaper press run, would have different tone values than those shown here and the screen would be less obvious. The photograph used for this demonstration was released by Ewing Galloway. (Continued on p. 124.)



50-line screen



55-line screen



60-line screen



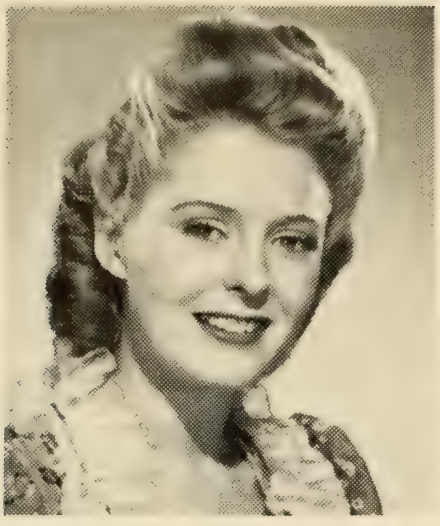
GRAFA-TONE screens are the result of years of research and experiment. Accepted as an outstanding achievement by the American Photo Engravers Association, acclaimed by eminent authorities in the Graphic Arts, GRAFA-TONE screens offer a new conception of printing excellence. The soft, beautiful texture, faithful reproduction of even the most delicate subjects.

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Halftone screens, continued



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85-line screen



100-line screen



110-line screen



120-line screen



133-line screen



150-line screen



175-line screen



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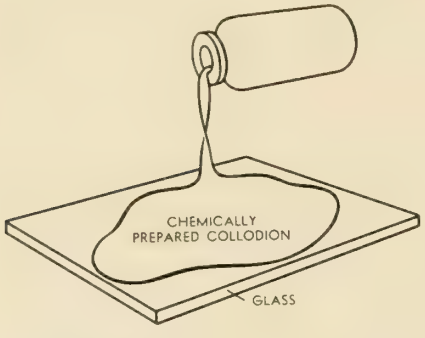
Making a photo-engraving

Fundamental steps in the manufacture of original letterpress printing plates from the preparation of the film base through finishing and blocking

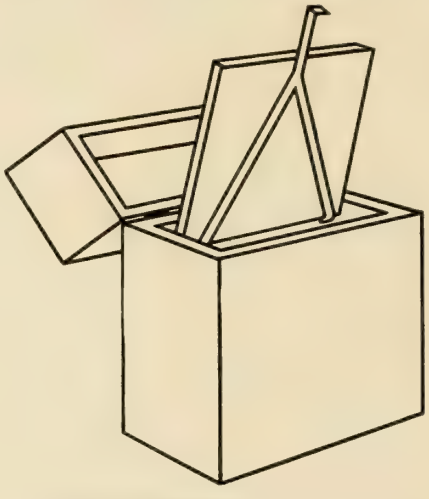
Compiled by the editors

Two main styles of photo-engravings are halftones and line-cuts. Halftones are usually made on copper, line cuts on zinc. However, coarse screen halftones are made on zinc, and line cuts with fine Ben Day are often produced on copper.

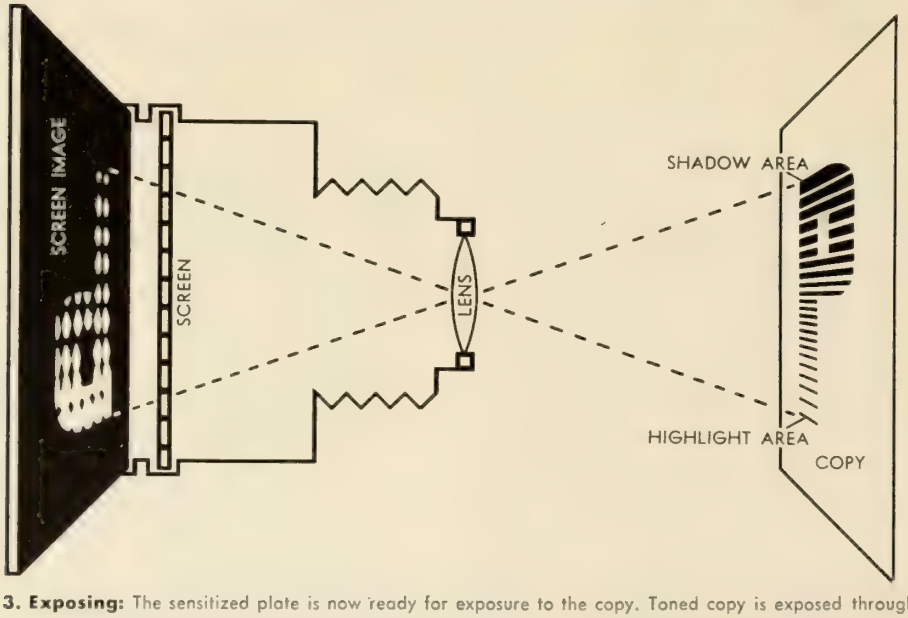
In addition, these two main kinds of photo-engravings have many variations, such as a combination plate, highlight halftones, etc. But except for a refining step or two, the fundamentals of the engraving process are as outlined below.



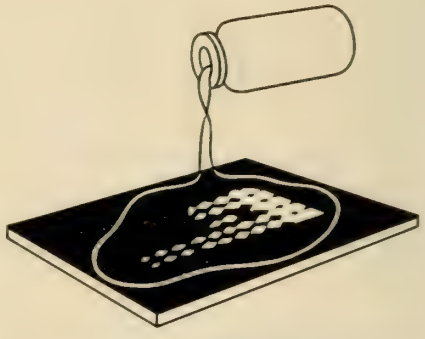
1. Film base: Collodion solution, containing necessary photographic chemicals except silver, is flowed evenly over glass plate which has been previously coated with albumin, leaving a thin film on the plate. A pyroxylin base is used for wet plate negatives. Plain collodion plus castor oil is used to strengthen the films. Ordinary emulsion is not sensitive to all colors. Some engravers now prefer to use prepared cut film.



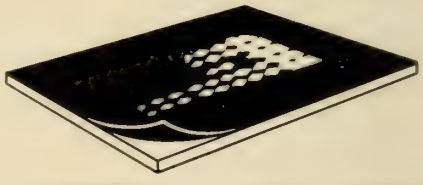
2. Sensitizing the film: In the next step, the glass plate is then dipped into the solution of silver nitrate which makes the film on the glass sensitive to light and ready for the exposure.



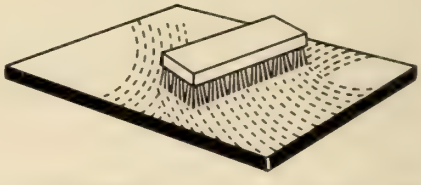
3. Exposing: The sensitized plate is now ready for exposure to the copy. Toned copy is exposed through a screen which breaks up the copy into many dots. Negative on plate is reversed from top-to-bottom, left-to-right. Copy can be enlarged, reduced, or made same size. Color copy is exposed through desired filter.



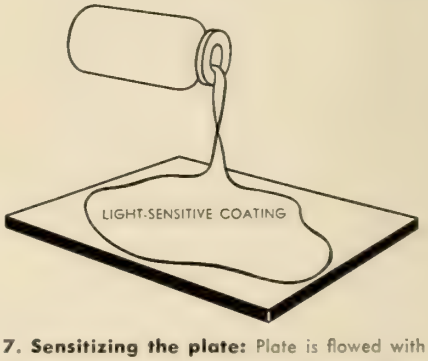
4. Developing: Negative plate is developed.



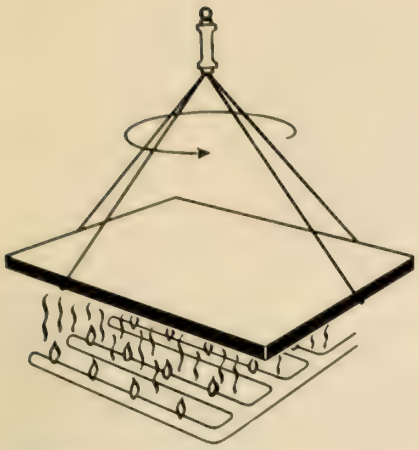
5. Combinations: Line negatives or halftone negatives are stripped (peeled off) glass plate, accurately set up together on another "glass flat." Soaking the glass in acetic acid loosens the film.



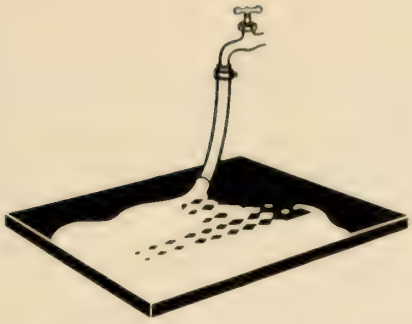
6. Metal plate: Plate, usually copper for halftones, zinc for line work, is prepared. First step is to scrub the plate clean before sensitizing.



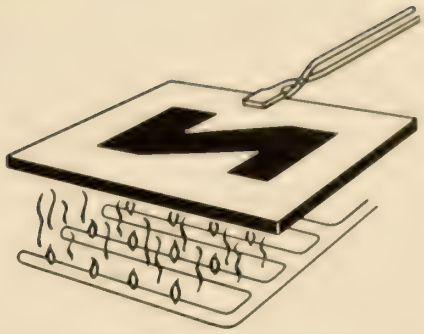
7. Sensitizing the plate: Plate is flowed with an entirely different solution, which may be either albumin, glue, or shellac sensitized with ammonium bichromate and is ready for the whirling.



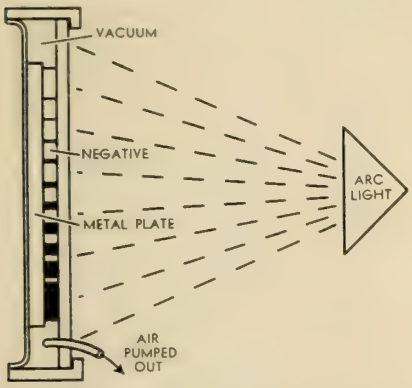
8. Whirling: Whirling over flame tends to dry sensitized solution onto the plate surface and distribute it evenly over the entire plate surface.



10. Developing plate: Copper or zinc plates are developed by washing away all areas of resist not hardened by light passing through negatives. This uncovers metal so it can be etched. Those areas hardened by light do not wash away and so protect their areas from the etching acid.

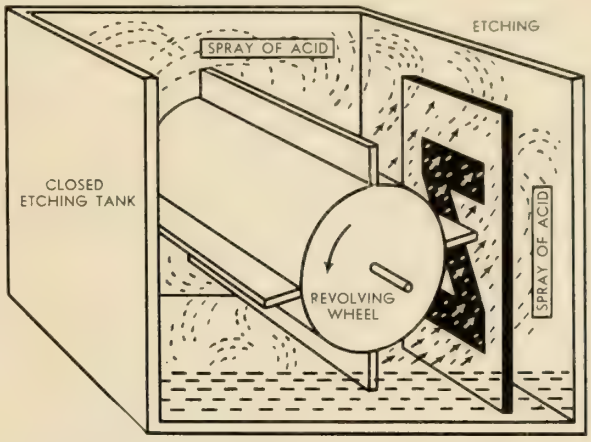


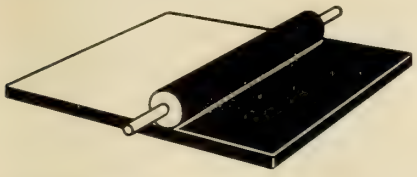
11. Burning in: Line or halftone plate with glue top or topping powder is heated over a flame and the powdered areas soon become acid resistant.



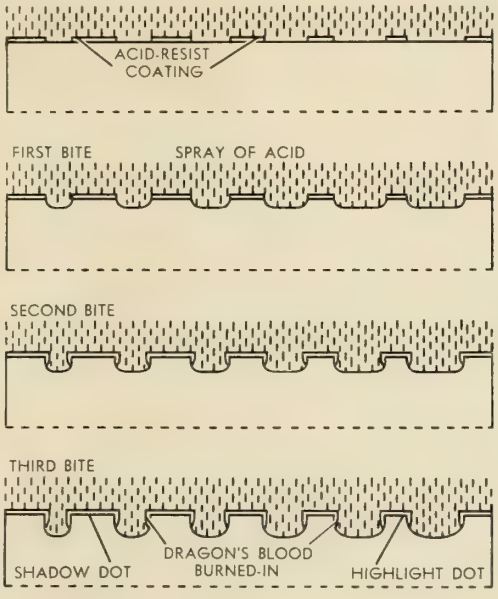
9 Exposing plate: Negative or negative group is printed on sensitized metal plate by exposure to light. Negative and plate are in absolute contact to insure sharp dot or line images. Air is pumped out of the holding frame. Atmospheric pressure acts to keep negative together with plate.

12. Etching (right): Etching is done in a number of ways. Here the plate is placed in a closed tub. A revolving paddle wheel throws an acid spray up against the plate surface, etching exposed areas to the proper depth. After first (flat) etch, nonprinting, acid-bitten areas are slightly lowered, leaving the printing areas in relief. Sides, or walls, of dots or lines, newly exposed, require an acid resist to prevent them from being eaten sidewise in deeper etching. See detailed sketch of progressive etching steps in Figure 13.

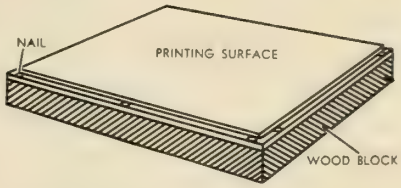




9A. Zinc plates: Rolling "etching ink" on line plate makes printing area hold "topping powder," which strengthens plate's acid resistance.

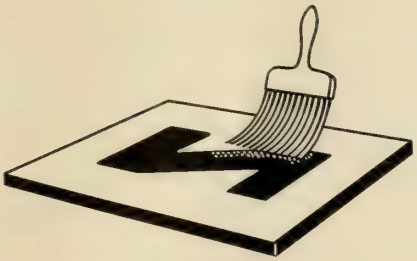


13. Progressive steps: Between etches the plate is washed free of acid. Powder (dragon's blood) is dusted on plate skillfully to form acid resist coating on sides of the dots. This is brushed in from each of the four sides to insure protection of all sides of all dots. (See steps 9B, 11.) Powder is not required in deep-etching plates with 120-screen or finer. Powder prevents undercutting.



14. Completion of plate: The plate may go through a number of finishing steps, such as re-etching, hand tooling, burnishing, trimming, mounting on wood block (pictured above), and routing, etc., as the specific job may require. Some plates are made on "heavy metal" (.152" thick) and are left unmounted, but have bevelled edges for use on patent base. Plates can also be sent to the make-up department loose-blocked, that is with block but not nailed down so that the compositor can block the plates to the best advantage.

Patent bases: Printer may find it necessary, to obtain firm impression and good register (particularly in color work) to run plates on a patent base. In such a case, electrotypes will be made and bevelled for mounting, and in order to obtain faithful electrotypes, original halftone should be supplied unblocked and with a border of metal to serve as a bearer for electrotyping. Metal plate mounting bases are made for 11-pt. electrotypes, stereotypes.



10A. Dusting: "Topping powder," dusted on developed plates, melts when heated, resists acid. Zinc employs a "cold enamel" or a shellac.

Color plates for comics

Masking, printing down of flat tints, and photographic techniques of making plates for color comics are among most popular methods now used

Everett R. Eaton

This article is in effect a summary of the most popular methods now in use for making plates for color comics, with a short discussion of some of the good and bad points of each process.

The making of photo-engraved plates for printing comic books or newspaper supplements in color has become a large and important branch of the industry. It is highly specialized, and the techniques employed are many and varied, and in some cases are kept secret.

Processes employed in the production of colored comics can be applied to any work of a similar nature, or when the same general effect is desired. The printing generally is done on a newspaper press from stereotypes, because of the economical advantages in this procedure.

Zinc plates

Although the plates can be made on copper as well as zinc, the latter usually is used both because of price and the fact that most work of this nature is printed on news stock or something comparable, requiring a coarse screen, although this is not necessarily so if better stock is used. The plates range from what often is termed "stop-out" plates to straight color process. Between these extremes are a number of variations in which:

1. A solid and one tint only are combined in one plate.
2. A solid and one tint are used with blends and gradations.
3. A solid and several tints or patterns are combined on one plate, perhaps with the blends and gradations.

Economic considerations

It might almost be termed as axiomatic that the cost of making a set of plates to produce a given effect is in direct ratio to the effect desired. In other words, it costs less to produce a set of zinc "stop-out" plates than it does a four-color process set, and there is about the same difference in results. Incidentally, the cost is about the same with any of these processes to separate color, whether it is done on the copy, the negative, or the plate.

In cases where the effect is the same, certain differences in operating technique can possess distinct advantages over other methods of working that are much to be desired, although the final cost is approximately the same in both procedures that are possible.

Solids plus tints

In this discussion of the different processes now employed and the effects produced, the simple stop-out plates, consisting of solid areas only, as well as the straight color process job both will be omitted. This leaves the zinc color plates, consisting of a solid and one tint, the black being in line only. The use of three "color" plates, consisting only of a solid and one tint, each printed in a different color, will produce in various combinations 24 different tints and shades.

If variations of this single tone are required in the form of blends, blushes, or gradations, they can be attained by etching, art work, or other hand work, depending on the particular process being used, but the cost of producing these plates will, for all practical purposes of reckoning, be approximately the same.

Photographing copy

There are three general techniques for producing plates consisting of solids and one tint or tone.

The first is by application of art work to copy that is in turn photographed. There are many variations of this system, as is also the case with the others. One alternative is to finish the black plate, pull proofs in light blue ink, perform the art work with pen and brush in gray and black, and photograph to size, making allowance for the stretch of the zinc.

Or, the original line negative may be stripped on acetate, prints made on nonstretching aerial mapping paper, or paper cemented to aluminum or some other nonstretching material, the art work performed thereon, and photographed. The camera, once set for correct size, is never touched.

A coarse screen halftone negative is made in which the solid areas are clear glass and the pure whites blocked solid with no trace of a dot. To facilitate this dropping out of the whites, the art work is sometimes drawn on ground glass, or other transparent material, on which is printed in blue an image of the black plate. The copy or art work receives the proper exposure by reflected light, then an auxiliary exposure by transmitted light. This latter exposure "blocks" the lights without unduly affecting the other tones contained in the original copy.

Hand drawn masks

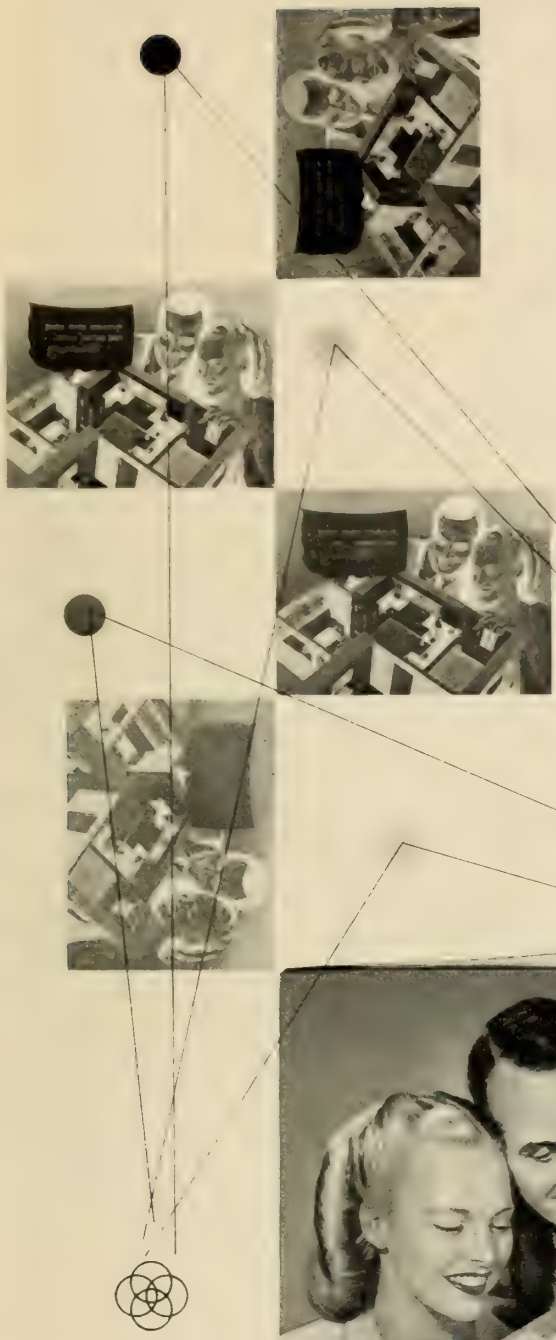
The second technique is by producing hand-drawn masks on acetate or other transparent material, which in effect become negatives and are printed from accordingly. These masks can be made by working directly over the colored sketch, which is an advantage in that fewer errors are likely to occur.

One method is to lay a sheet of acetate over the color sketch, and in the case of the yellow plate, for example, opaque out all areas that do not contain yellow. Such a transparent mask, if used as a negative for making a print on metal, would produce only solid areas in the photo-engraving cut.

Tint masks

Tints can be reproduced by making an additional mask for the tint only, blocking in solid those areas that are to contain the tint, then using this mask in conjunction with a prepared large flat tint (either purchased on the outside or made in the shop) of the desired strength for double printing on metal.

Negative masks also can be made and pieces of prepared tints cut out and



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pasted over the tint areas, thus dispensing with the double printing operation. Or, a large prepared tint can be laid over the hand-made negative mask and the solid areas scraped clean; or prepared transparent sheets used, consisting of printed tints in one and sometimes even two strengths that can be developed chemically as required.

The number of ways in which acetate, opaque, prepared tints, double printing, etc., can be combined is almost endless, and the effects obtained are limited only by the ingenuity of the operator.

Working on plate

The third technique is by manual work applied directly to the zinc plate. Under this classification comes Ben Day and another process that consists of printing down a flat allover tint of the desired strength in cold top on the zinc, then a print of the line negative on top of this in ink, after which the plate is stained thoroughly and the ink print removed with benzol.

Then, with a color sketch as guide, all areas that are to consist of a tint are "painted in" on the plate with staging ink. When this has been completed, the cold top is removed with acetic acid. The ink covering the previously "painted-in" tint areas is removed, and finally all areas calling for solid color are "painted in" on the plate with staging ink, at which point the plate is ready for etching.

This plate now contains solids and one tint in the areas called for by the copy. The areas calling for color were "painted in" only once. Whether tint or solid, any duplication of effort in this effect would be fatal from a cost standpoint and economy considerations.

The methods appraised

When the art work is photographed, as in the first technique, there is some possibility of lack of register, although this can be pretty well overcome. The most serious disadvantage is the fact that considerable more gallery time is required than with either of the other two processes. Its main advantage is that any number of tints, tones, blends, etc., are easily obtained, although probably not at any less expense than if done by etching, as in the third basic process.

The big feature of the second and third techniques is the complete elimination of all gallery time, except for the making of the original line negative for the black. However, in the second basic system, where acetate or celluloid is used, the problem of register is practically an insurmountable one.

Ben Day

Conventional Ben Day requires a minimum of gallery time, and for all practical purposes eliminates the problem of register. Its main disadvantage is that the actual work involved in gamboging and laying tints is considerable, and the results, from an etching standpoint, sometimes are uncertain.

It must be remembered that whatever the process, each area of color, whether tint or solid, must be "painted in" or "around" at some time at least once. The problem, then, among other things, is to make sure that this is done only once; after that, it is a question of selecting the method that appeals to and suits best the particular set-up of the individual plant that is doing this job.

Production considerations

The writer believes that the method of printing down a flat tint as described in the third technique has certain advantages not found in any other method:

1. The absolute certainty of perfect register, the image going directly from glass to metal in all plates.
2. The complete elimination of all flexible transparent materials, such as acetate, with the attendant danger of stretch and shrink.
3. The ability to obtain various tones, blends, and gradations by the usual method of staging and etching, which is no more costly and is certainly far simpler than either of the other methods.
4. The minimum use of gallery time, only the original line negative being required.
5. The even flow of work through the plant when this process is used, as photocopies can be made first and colored immediately by "story" rather than "flat," being then ready for use by the time the image is on metal ready for color separation.
6. No in between steps or back tracking, such as pulling proofs in blue ink, or heating the acetate to regain fit, are necessary.
7. The cost should be less because the operations involved and actual materials used are fewer than in any other known process that accomplishes equal results.

Much color comic production is done on rotary presses by wet printing. The only difference between "wet" color printing and any other kind lies principally in the matter of inks and getting them to "lay" or "trap" properly one on the other. The problems of impression, register, etc., are peculiar to all printing methods.

The difficulty arises when heavy layers of ink are laid down one on top of the other wet. The heavier the layers of ink, the harder it is to get them to lay or trap properly. To get them to trap at all, it is necessary for the first color down to be as stiff as possible, with each succeeding color just a little less stiff; otherwise, instead of the ink going from the plate to the sheet, the reverse would be the result that would be obtained.

Wet printing plates

To obtain color plates for wet printing, whether or not for comic sections as described above, that not only will get a client approval but also will give a reliable indication of how the plates will print in a specific magazine or list of magazines, it is essential that the engraver know just what inks the various publishers use, what their color rotation is, and use samples of the same stock on which the job will be printed for the proofing of the finished plates.

Color bars

Many publishers furnish the proving stock imprinted with gradation strips or color bars and request that the engraver run a duplicate gradation strip or color bar, matching the imprint in color and quantity of ink. This is an excellent idea, but in as much as these imprinted color bars are to be used as a guide or standard, the imprinting must be done very carefully; otherwise, the point is lost.

Proving ink

The engraver as a rule uses a stiffer proving ink containing more pigment, while the printer, because of press speed, uses a thinner ink that has a tendency to spread somewhat, so that the over-all effect, as far as tone value and color is concerned, is essentially the same, although the small shadows in actual printing will, and in fact are intended to, fill in.

In all cases the engraver should receive from the publisher duplicate gradation strips, the same as used in pulling the original proofs.



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Standard photo-engraving scales

How to read the scales, determine unit values, apply side notes and consider time charges when estimating costs of black-and-white or color plates

W. B. Lawrence

In a story on this subject in Volume 7 of the PRODUCTION YEARBOOK it was stated that photo-engraving was unique in that it combined factory production with tailor-made requirements. It is the originality and differentness of photo-engravings that make them valuable to advertisers.

It is necessary in estimating the value of photo-engravings to consider the effect on cost and price of these twin factors: factory production and tailor-made work. Photo-engravings are not hardware nor the stamped-out metal products of machine production. Instead, they are painstakingly prepared special products, designed and handled at every step to meet someone's particular requirements.

There is a direct line of progression in the production of plates that simplifies evaluation of the work. The key to that line of progression may be found in the chart figures and side notes of the Standard Scales for Photo-Engravings, which will be described later.

Every photo-engraved plate goes through a certain basic routine of work that is alike for all other plates of its kind. That routine represents the factor of factory production mentioned above. At the same time, each plate that is to have some special feature receives a different or out-of-the-ordinary treatment in some respect.

Correct estimating follows the routine of production and analyzes it into the elements involved. When proper values are attached to these elements, the result is a price that is recognized as valid by anyone familiar with the operation. Correct analysis of value elements is the foundation of a sound estimate.

Analytical estimating

Analytical estimating may be described as a process of breaking up a job of work into its parts, placing a value on each of the parts, then bringing the parts together in a whole figure that is the price of the completed work.

This reasoning may be applied to the estimating of a typical job of photo-engraving. First, the job is either color process or black-and-white; assume that it is black-and-white. Second, it is either halftone, line etching, zinc halftone, or Ben Day line etching; assume it is halftone. Third, the halftone, is either a photomechanical reproduction or it requires certain special treatments; if the former, that is all there is to it; if the latter, those special treatments must be analyzed and evaluated still further to secure an accurate estimate.

Standard scales

This analytical procedure is best expressed in the two Standard Scales used by photo-engravers in estimating prices. One is the Standard Scale for Photo-Engraving (Form I), dealing with the valuation of black-and-white plates; the other is the Standard Scale for Color Process Photo-Engravings (Form I), which deals in a similar manner with the valuation of color process work.

Both scales classify and reclassify the kinds of plates to which they refer in such a manner that provision is made for all the factory production methods and special treatments that may be met in any particular lot of work. These provisions are found in the chart figures and side notes of the two scales.

When properly applied to any plates, these chart figures and side notes result in as precise an evaluation of work as could be desired.

The Standard Scales are not price lists, as is often erroneously supposed. Nowhere in either scale is a price or a money value stated. Instead, they give rules of valuation, a rating in terms of units, that when multiplied by the engraver's selling rate, will give a price.

The price or selling rate is entirely a matter of individual application of these rules by each engraver, according to his own costs, facilities, location, operating conditions, and the effects of supply and demand on his business. It might be well here to clarify the work "value" as used in this article.

To an advertiser or user of anything, value usually means money value or worth expressed in terms of dollars and cents. To an economist, producer, or estimator, value is more apt to be an expression of quantity or amount of work turned out, regardless of the amount of money received for it. It is in the latter sense that value is used in this article.

Thus the words "unit of value" refer to the relative amount of work required to produce plates of different kinds or sizes, and are shown as figures in the chart sections of the Standard Scales. This meaning also is true of percentages, or time rates, used in the side notes which cover every contingency.

They express the relations of extra work to the base work stated by the units of value. It is not until these values are multiplied by the "selling rates" used by the photo-engraver in selling his production that a translation into money values occur.

The Standard Scale for Photo-Engravings (Form I), dealing with black-and-white plates, consists of two parts: two chart sections 17x22 inches, 59 numbered side notes, and five lettered side notes which cover every contingency.

Side notes

The lettered side notes, with the paragraphs at the top of the scale, give general instructions as to how the scale is to be used. The chart sections state basic unit values for different sizes and kinds of plates. The numbered side notes state the methods of valuation to be followed for the exceptional features that may be found in a plate. The scale applies the principles of analysis previously discussed.

The first step of analysis used in the scale is to divide black-and-white plates into four classes for valuation purposes: square-finish halftones on copper, line etchings on zinc, coarse screen halftones on zinc, and Ben Day zinc etchings. Two


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of these groups are to be found on each side of the scale. These four groupings are the basic classification of black-and-white plates.

The basic classifications are set up in accordance with certain specifications in four side notes, as follows:

Square-finish copper halftones. Note 1
Zinc etchings ..... Note 13
Coarse screen halftones on zinc. Note 33
Ben Day zinc etchings ..... Note 43

If a plate meets all the relevant specifications stated in this side note, it is valued at the scale figure for its size, multiplied by the unit value selling rate of the photo-engraver.

If a plate differs in some respect from the specifications stated in the governing side note, it is to that extent no longer in that basic classification. It then is subject to a change in valuation according to the extent that it differs from the basic specifications. This change is found in the appropriate side note or notes.

Basic plates

For an example, assume that a copper halftone measures 5x8 inches in printing surface and complies with all the specifications stated in Note 1. Such a plate is a basic type and is rated at the scale figure for its size, 222 units of value, multiplied by the selling rate per unit charged by the engraver. No other additional charge should be made for such a plate because it is entirely within the specifications of Note 1.

But suppose that this halftone is wanted in outline form, or with its background cut away. That condition takes it out of the specification "square finish" stated in Note 1.

Note 23 deals with outlining and provides a charge of 50 per cent of the scale value, or, if the outlining is excessive and complicated, a time charge. Thus the charge is a combination of Notes 1 and 23.

Assume next that cutting away the background reduces the size of the plate from 5x8 to $1\frac{1}{2}$x$7\frac{1}{2}$ inches, and that the outlining is "ordinary" or within the 50 per cent limitation. In that case the plate is found to be 201 units of value, which is now its square-halftone value. In accordance with Note 23, 50 per cent of 201 units, or 101 units, is added, making 302 units its value as an outlined halftone. These 302 units of value, multiplied by the selling rate, in effect give the value of this outlined halftone under the conditions stated.

To carry the illustration a bit farther, assume that the halftone is made 85-line screen instead of 100- to 150-line screen. Note 5 states that 25 per cent of the halftone value should be added for the coarse screen. The estimate now reads:

Note	Operation	Unit value
1	Square Halftone	201
5	Coarse Screen	50
23	Outlining	101
	Total	352

Those who are interested in a more complete exposition of estimating for photo-engravers are referred to the recent book, "The Standard Scale in Theory and Practice," published by the American Photo-Engravers Association, Chicago 4, Ill.

Accuracy in estimation by photo-engravers is promoted by the use of a logically arranged estimating blank. Such a blank aids greatly in preventing errors, omissions, and duplications in the construction of an estimate. The American Photo-Engravers Association publishes such an estimate blank, known as the Standard Estimate Blank (Form 15), in the trade.

The blank lists all the scale bases and side note exceptions that affect the production of a photo-engraving, and gives the side note numbers that apply to each item. It gives the basic scale classifications in its upper section, follows this with the changes in a plate from these basic conditions, then deals with the various exceptions and extra operations.

In using the blank, it is recommended that all items that apply to a job be first checked in the check column. Then the various units of value and amounts of time that apply to each checked item are entered in a column for that purpose. The applicable selling rates are entered next and calculations are made of the charge for each item.

The totals of these charges are then brought together at the bottom of the blank to obtain the estimated or billing price of the photo-engraving.

Color plates

The second major division of photo-engraving consists of the reproduction of sets of color process photo-engravings. Estimates for this class of work are made through the use of the Standard Scale for Color Process Photo-Engravings (Form I).

The color process scale consists of a chart section, 16x22 inches, giving the basic units of value for all sizes of color process sets within this limit, arranged by sixteenths of a square inch. There are four lettered side notes that, with the explanatory paragraphs in the heading of the scale, give the general explanations of the scale and state the principles to be followed in estimating.

There also are 18 numbered side notes that give specific rules of valuation for the construction of estimates. In addition, it is also necessary to refer to the Standard Scale for Photo-Engravings (Form I) under certain conditions where black-and-white techniques are to be applied to a set of color process plates as is often the case.

Color selling rates

The identical general system of units of value is used in the color process scale as in the black-and-white scale. However, the selling rates for color process are necessarily much higher, because while the two scales start with the same minimum number of units of value, 100, the amount of work required is much greater with the former class.

There are not only two or more plates in color process as compared with one plate in black-and-white, but also the operations performed take more time, require more expensive skills, and cost considerably more.

Color process reproduction contains many difficult and varying aspects. The estimator will obtain a much better understanding if he will bear in mind that there are 60 or more conditions to be considered, summarized briefly in the following key outline:

1. There are eight kinds of reproductions covered by the color process scale.
2. There are six copy conditions, any one of which may apply to all of these eight kinds of reproductions.
3. There are two main classes of work, under either of which all of the sets of Plates 1 and 2 may come.
4. Merchandising plates may be further classified under 10 or more groupings, depending upon their nature.
5. There are four or more kinds of corrective work, any or all of which may be required on any or all of the foregoing classes.
6. There are 24 or more other complications or kinds of work that may be required on any merchandising sets of plates.
7. There are also a few miscellaneous conditions that may have to be considered with any set of plates.



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Photo-engraving estimator

Unit values for black-and-white plates and for color originals listed for square-inch areas; plate area prices given for duplicates

Edward M. Gottschall

The tables on the next two pages list the unit-value figures for 43 different kinds of original black-and-white and also process color photo-engravings. The tables on the succeeding six pages constitute a multiplication table that makes easy the determining of the price of either original or duplicate plates.

To determine plate cost, it is necessary to arrive first at the unit value for the job. To determine unit values of original plates, the chart on the next two pages should be used. For example: An ordinary zinc line etching from black-and-white copy (category 1 in the chart) is made 4″ x 4″, or 16 square inches. The chart shows the unit value for this job to be 106.

To determine the price, it is now necessary to multiply the unit value by the selling rate. On the six-page calculator, which immediately follows the unit value tables, locate the point of intersection of the unit value and the selling rate.

For unit values over 100, as 106. simply read off the value for 100, the value for 6, and add. If the selling rate in the above example were 4.8 cents, the price would be $4.80 plus .29, or $5.09.

For unit values of 200 or more, as 300, read the tables as in the following example: At rate 4.8 cents, 30 units equal $1.44. Simply mentally move decimal one place to right, so that for 300 units, price will equal $14.40. By means of these tables, accurate prices can be arrived at almost instantly, and in most cases without use of a pencil.

Consult scale

For plates of specific areas not listed in these tables, consult scale or use as the unit value a figure appropriately between the figures immediately larger and smaller than that of a given plate. This will give a reliable estimate of the plate cost.

For example: What is the cost of an ordinary zinc etching from black-and-white copy of 14 square inches? On the chart, a 16-square inch zinc etching has unit values of 106, a 12-square inch etching, 97. Taking 102 as the figure for the 14-square inch plate and multiplying by the selling rate will give a reliable estimate of the cost of the plate. Always bear in mind that long, narrow plates have more units than a more nearly square plate of equal area.

The actual price of any engraving is determined by the individual engraver. A basic price may be arrived at by multiplying the unit values of the Standard Scale for Photo-Engravings, Form I, by a selling rate as described above. This rate varies from engraver to engraver and with the kind of work. For fuller explanation of this scale, see article on standard scales, Pages 132 and 134.

To determine the area of a plate, measure the printing area. Do not include the bevel or plate margin. There is an extra charge for extra long plates. To estimate reliably the cost of a long plate, consider the short side as one-third the long, multiply these to get the area for pricing. For example: Plate is nine square inches but is 9 x 1. Figure this as 9 x 3, or 27 square inches, and look up unit value accordingly.

Plates larger than those shown on the scale (more than 22 x 17) are valued as follows: Halftones on copper, 3½ units of value per square inch; line etchings on zinc, 2⅒ units per square inch, and etchings with Ben Day or other tints at 2⅞ per square inch.

In addition to the unit value charges, many photo-engravings involve hand work which, being variable and indeterminable, cannot be assigned definite unit values and is therefore to be computed on a time-charge basis.

The time for these various operations is not charged for per minute but falls into certain minimum time units. The minimum unit for stripping is 15 minutes, for surprinting, one hour, etc.

Occasionally some savings can be effected by ganging up engravings. When five or more pieces of copy in one order are of such size and tone value that they can be photographed together, stripped, printed, and etched as one flat not exceeding 14 x 17 inches in size and each having 132 units or less for halftones or 102 units for zincs, they take the following discount:

No less than five, 10 per cent; for every one additional to five, add 1 per cent to the discount. Maximum discount is 25 per cent; maximum number of discountable subjects per flat: 20.

When black-and-white engravings are to be made from color copy and color separation negatives are required, there is an extra charge.

In addition to these engraving practices, certain interesting relationships can be observed by comparing the unit values. For example, in very large plates (225 square inches or over) there is no extra charge for zinc Ben Day etching over regular zinc line plates.

Coarse screen (100 line or coarser) zinc halftones are less expensive than a zinc line plate or a zinc Ben Day in sizes from 6 to 225 square inches. In sizes over 225 square inches, all three kinds of plates of the same size cost the same. Zinc halftones finer than 100-line cost the same amount as do copper halftones having the same printing area.

Color plates

On the color scale, it will be observed that plates made from monochrome copy and plates made from carbro prints or other dye-colored or photographic color prints cost the same. The least expensive of all color plates are Duographs—two-color made from monochrome copy.

The least expensive four-color process plates are those made directly from the object, or from normal copy. Those from monochrome copy or carbros and the like are next, and plates using transparencies as copy or color guides are the most costly. There is usually a time charge for arranging groups and special lighting, when working from objects.

All scale-unit values are for commercial reproductions, with all plates of a set squared up. Special operations are chargeable at the time rates mentioned.

How to use

1. Measure printing area of plate in square inches.

2. Determine class of plate from accompanying list of 43 classes.

3. Locate on tables point of intersection of class of plate and square inch area.

4. Locate on Price Calculator tables (immediately following unit value tables) point of intersection of selling rate (say 4.8 cents) and unit value (106).

Note: This is a simplified example. Be sure to consider time charges. See article in this section by W. B. Lawrence, pages 132-134.

Example

$4 \times 4 = 16$

Zinc line plate
Black & white copy
= No. 1

106 units

100	$4.80
6	.29
price	$5.09

Classes of plates

Zinc line cuts

1. Black-and-white copy.
2. Duplicates ordered and made with originals.
3. Solid tint plates.
4. Difficult copy, special handling.
5. Reverse etchings, black to white, or vice versa.
6. Reverse etchings, on metal for embossing.
7. Heavy metal.

Copper line

8. Regular copper line.
10. Heavy metal.

Copper Ben Day

9. Regular.
11. Heavy metal.

Zinc Ben Day

12. Regular.
13. Heavy metal.

Zinc halftones

14. Black-and-white copy, 100 screen or coarser.
15. Duplicates ordered, made with originals
16. Finer than 100-line screen (same price as No. 24).
17. Combination halftone and line on zinc.
18. Highlight halftone or combination highlight on zinc.
19. Heavy metal.
20. Vignetted or outlined.
21. Oval, circle, round corner, no finishing line.
22. Oval, circle, round corner, with finishing line.
23. Enlargements (blowups).

Copper halftones

24. Black-and-white copy, 100 to 150-line screen.
25. Duplicates ordered, made with originals
26. Combination halftone and line on copper
27. Highlight halftone or combination highlight on copper.
28. Heavy metal.
29. Vignetted or outlined.
30. Oval, circle, round corner, no finishing line.
31. Oval, circle, round corner, with finishing line.
32. Enlargements (blowups)
33. Screen coarser than 85-line or finer than 150-line

Color, copper halftones

34. Set of 2-color process plates direct from colored object or copy
35. Set of 3-color process plates, as above
36. Set of 4-color process plates as above
37. Duographs, 2 plates, 1 color copy
38. Set of 2-color process plates black and white or monochrome copy or from carbro or similar prints
39. Set of 3-color process plates, as above
40. Set of 4-color process plates as above
41. Set of 2-color process plates, from screen plate and colored transparencies (Kodachrome, Dufay colors, Autochromes, etc.)
42. Set of 3-color process plates, as above
43. Set of 4-color process plates as above

Total square inch area of plate

No.	1	2	3	4	6	9	12	16	20	25	30	36	42	49	56	64	72	81	90	100	110	121	132	144	156	169	182	196	210	225	256	352	No.
1	73	73	73	73	80	89	97	106	114	123	132	141	154	162	173	186	199	212	231	251	270	291	313	336	359	384	409	437	463	493	552	762	1
2	59	59	59	59	64	71	78	85	91	98	106	113	121	130	138	149	160	170	185	201	216	233	250	269	287	307	327	350	390	394	442	610	2
3	24	24	24	24	27	30	32	35	38	41	43	47	50	54	58	62	66	71	77	84	90	97	104	112	120	128	136	146	154	164	184	254	3
4	91	91	91	91	100	111	121	133	143	154	165	176	189	203	216	233	249	265	289	314	338	364	391	420	449	480	511	546	579	616	690	953	4
5	97	97	97	97	107	119	129	141	152	164	176	188	201	216	231	248	265	283	308	335	360	388	417	448	479	512	545	583	617	657	736	1016	5
6	170	170	170	170	187	208	226	247	266	287	307	329	352	378	404	434	464	495	539	586	630	679	730	784	838	896	954	1020	1080	1150	1288	1778	6
7	110	110	110	110	120	134	145	159	171	184	198	211	226	243	259	279	299	318	346	376	405	436	469	504	540	576	613	655	694	740	828	1143	7
8	146	146	146	146	160	178	194	212	228	246	264	282	302	324	346	372	398	424	462	502	540	582	626	672	718	768	818	874	926	986	1104	1522	8
9	183	183	183	183	200	223	243	265	285	308	330	353	378	405	432	465	498	530	578	628	676	728	782	840	898	960	1022	1092	1158	1233	1380	1906	9
10	125	125	125	125	134	146	160	174	199	214	236	260	286	315	344	378	411	448	485	528	570	614	660	709	759	811	864	924	980	1043	1169	1614	10
11	208	208	208	208	227	252	275	300	319	350	377	405	435	468	501	541	580	620	675	723	790	851	914	982	1050	1122	1195	1277	1354	1441	1614	2224	11
12	91	91	91	91	97	107	115	127	143	151	158	169	178	189	201	213	226	240	251	262	273	291	313	336	359	384	409	437	463	493	552	762	12
13	128	128	128	128	137	152	164	180	197	213	224	240	245	270	279	306	317	346	363	388	410	436	469	504	540	576	613	655	694	740	828	1143	13
14	74	74	74	74	77	82	87	93	100	108	115	125	134	145	156	168	182	202	223	245	274	291	313	336	359	384	409	437	463	493	552	762	14
No.	**1**	**2**	**3**	**4**	**6**	**9**	**12**	**16**	**20**	**25**	**30**	**36**	**42**	**49**	**56**	**64**	**72**	**81**	**90**	**100**	**110**	**121**	**132**	**144**	**156**	**169**	**182**	**196**	**210**	**225**	**256**	**352**	**No.**

Total square inch area of plate

No.	Total square inch area of plate																																No.
	1	2	3	4	6	9	12	16	20	25	30	36	42	49	56	64	72	81	90	100	110	121	132	144	156	169	182	196	210	225	256	352	
15	60	60	60	60	62	66	70	74	80	86	92	100	107	116	125	134	146	162	178	196	219	233	250	269	287	307	327	350	390	394	442	610	15
16	100	100	100	100	107	117	128	141	155	171	189	208	229	252	275	302	329	358	388	422	456	491	528	567	607	649	691	739	784	834	935	1270	16
17	146	146	146	146	160	178	194	212	228	246	264	282	302	324	346	372	398	424	462	502	540	582	626	672	718	768	818	874	926	986	1104	1522	17
18	222	222	222	222	231	246	261	279	300	324	345	375	402	435	468	504	546	606	669	735	822	873	939	1008	1077	1152	1227	1311	1389	1479	1656	2286	18
19	110	110	110	110	120	134	145	159	171	184	198	211	226	243	259	279	299	318	346	376	405	436	469	504	540	576	613	655	694	740	828	1143	19
20	150	150	150	150	161	176	192	212	233	257	284	312	343	378	412	453	493	537	582	633	684	736	792	850	910	973	1036	1108	1176	1251	1402	1905	20
21	125	125	125	125	134	146	160	174	199	214	236	260	286	315	344	378	411	448	485	528	570	614	660	709	759	811	864	924	980	1043	1169	1588	21
22	133	133	133	133	142	156	171	188	207	228	252	277	305	336	367	403	439	477	517	563	608	655	704	756	809	865	921	985	1045	1112	1247	1693	22
23	110	110	110	110	120	134	145	159	171	184	198	211	226	243	259	279	299	318	346	376	405	436	469	504	540	576	613	655	694	740	828	1143	23
24	100	100	100	100	107	117	128	141	155	171	189	208	229	252	275	302	329	358	388	422	456	491	528	567	607	649	691	739	784	834	935	1270	24
25	80	80	80	80	86	94	102	113	124	137	151	166	183	202	220	242	263	286	310	338	365	393	422	454	486	519	553	591	627	667	808	1016	25
26	200	200	200	200	214	234	256	282	310	342	378	416	458	508	550	604	658	716	776	844	912	982	1056	1134	1214	1298	1382	1478	1568	1668	1870	2540	26
27	300	300	300	300	321	351	384	423	465	513	567	624	687	756	825	906	987	1074	1164	1266	1368	1473	1584	1701	1821	1947	2073	2217	2352	2502	2805	3810	27
28	125	125	125	125	134	146	160	174	199	214	236	260	286	315	344	378	411	448	485	528	570	614	660	709	759	811	864	924	980	1043	1169	1588	28
29	150	150	150	150	161	176	192	212	233	257	284	312	343	378	412	453	493	537	582	633	684	736	792	850	910	973	1036	1108	1176	1251	1402	1905	29
30	125	125	125	125	134	146	160	174	199	214	236	260	286	315	344	378	411	448	485	528	570	614	660	709	759	811	864	924	980	1043	1169	1588	30
31	133	133	133	133	142	156	171	188	207	228	252	277	305	336	367	403	439	477	517	563	608	655	704	756	809	865	921	985	1045	1112	1247	1693	31
32	146	146	146	146	160	178	194	212	228	246	264	282	302	324	346	372	398	424	462	502	540	582	626	672	718	768	818	874	926	986	1104	1522	32
33	125	125	125	125	134	146	160	174	199	214	236	260	286	315	344	378	411	448	485	528	570	614	660	709	759	811	864	924	980	1043	1169	1588	33
34	55	55	55	55	57	63	67	72	75	81	86	92	98	105	112	120	128	138	147	157	167	178	192	202	215	227	240	253	270	285	317	414	34
35	80	80	80	80	83	91	98	104	110	118	125	134	142	153	163	175	186	200	214	229	243	259	275	294	312	330	350	371	392	414	461	602	35
36	100	100	100	100	104	114	122	130	137	147	156	167	178	191	204	219	233	250	267	286	304	324	344	367	390	413	438	464	490	518	576	753	36
37	33	33	33	33	35	38	41	43	46	49	52	56	59	64	68	73	74	83	89	95	101	108	115	122	130	138	146	155	163	173	192	251	37
38	69	69	69	69	71	79	84	90	94	101	108	115	123	126	141	150	161	173	184	201	210	224	237	253	269	285	308	320	338	356	397	520	38
39	100	100	100	100	104	114	122	130	137	147	156	167	178	191	204	219	233	250	267	286	304	324	344	367	390	413	438	464	490	518	576	753	39
40	125	125	125	125	130	143	153	163	171	184	195	209	223	239	255	274	291	313	334	358	380	405	430	459	488	516	548	580	613	648	720	941	40
41	83	83	83	83	86	95	106	108	113	122	129	138	148	158	169	180	193	207	222	236	252	269	286	305	324	343	364	385	407	428	478	625	41
42	120	120	120	120	125	137	147	156	165	177	188	201	214	230	245	263	280	300	320	344	365	389	413	440	468	496	526	557	588	621	691	904	42
43	150	150	150	150	156	171	183	195	206	221	234	251	267	287	306	329	349	375	400	429	456	486	516	550	585	620	657	696	735	777	864	1130	43
No.	1	2	3	4	6	9	12	16	20	25	30	36	42	49	56	64	72	81	90	100	110	121	132	144	156	169	182	196	210	225	256	352	No.
	Total square inch area of plate																																

Unit values	Selling rate in cents																															Unit values
	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	
1	.03	.03	.03	.03	.03	04	.04	.04	0.4	.04	.04	.04	.04	.04	.04	.05	.05	.05	.05	.05	.05	.05	.05	05	05	06	06	06	06	06	06	06	1
2	.06	.06	.06	.07	07	.07	.07	.07	.08	.08	.08	.08	.08	.09	.09	.09	.09	.09	.10	.10	.10	.10	.10	.11	11	.11	.11	11	.12	.12	12	12	2
3	.09	.09	.10	.10	.10	.11	.11	.11	.11	.12	.12	.12	.13	.13	.13	.14	.14	.14	.14	.15	.15	.15	.16	.16	.16	.17	.17	.17	.17	18	18	18	3
4	.12	.12	.13	.13	.14	.14	.14	.15	.15	.16	.16	.16	.17	.17	.18	.18	.18	.19	.19	.20	.20	.20	.21	.21	.22	.22	.22	23	.23	24	24	24	4
5	.15	.16	.16	.17	.17	.18	.18	.19	.19	.20	.20	.21	.21	.22	.22	.23	.23	.24	.24	.25	.25	.26	.26	.27	.27	.28	.28	.29	.29	30	30	31	5
6	.18	.19	.19	.20	.20	.21	.22	.22	.23	.23	.24	.25	.25	.26	.26	.27	.28	.28	.29	.29	.30	.31	.31	.32	.32	.33	.34	.34	.35	.35	36	37	6
7	.21	.22	.22	.23	.24	.25	.25	.26	.27	.27	.28	.29	.29	.30	.31	.32	.32	.33	.34	.34	.35	.36	.36	.37	.38	.39	.39	.40	.41	.41	42	43	7
8	.24	.25	.26	.26	.27	.28	.29	.30	.30	.31	.32	.33	.33	.34	.35	.36	.37	.38	.38	.39	.40	.41	.42	.42	.43	.44	.45	46	.46	47	48	49	8
9	.27	.28	.29	.30	.31	.32	.32	.33	.34	.35	.36	.37	.38	.39	.40	.41	.41	.42	.43	.44	.45	.46	.47	.48	.49	.50	.50	51	52	53	54	55	9
10	.30	.31	.32	.33	.34	.35	.36	.37	.38	.39	.40	.41	.42	.43	.44	.45	.46	.47	.48	.49	.50	.51	.52	.53	.54	.55	.56	.57	.58	59	60	6	10
11	.33	.34	.35	.36	.37	.39	.40	.41	.42	.43	.44	.45	.46	.47	.48	.50	.51	.52	.53	.54	.55	.56	.57	.58	.59	.61	62	.63	64	65	66	67	11
12	.36	.37	.38	.40	.41	.42	.43	.44	.46	.47	.48	.49	.50	.52	.53	.54	.55	.56	.58	.59	.60	.61	.62	.64	65	.66	.67	68	.70	.71	72	73	12
13	.39	.40	.42	.43	.44	.46	.47	.48	.49	.51	.52	.53	.55	.56	.58	.59	.60	.61	.62	.64	.65	.66	.68	.69	.70	.72	.73	74	.75	.77	78	79	13
14	.42	.43	.45	.46	.48	.49	.50	.52	.53	.55	.56	.57	.58	.60	.62	.63	.64	.66	.67	.69	.70	.71	.73	.74	.76	.77	.78	80	.81	.83	84	85	14
15	.45	.47	.48	.50	.51	.53	.54	.56	.57	.59	.60	.62	.63	.65	.66	.68	.69	.71	.72	.74	.75	.77	.78	.80	.81	.83	84	.86	.87	.89	90	92	15
16	.48	.50	.51	.53	.54	.56	.58	.59	.61	.62	.64	.66	.67	.69	.71	.72	.74	.75	.77	.78	.80	.82	.83	.85	.86	.88	.90	91	.93	94	96	98	16
17	.51	.53	.54	.56	.58	.60	.61	.63	.65	.66	.68	.70	.71	.73	.75	.77	.78	.80	.82	.83	.85	.87	.88	.90	.92	.94	.95	97	.99	1 00	1 02	1 04	17
18	.54	.56	.58	.59	.61	.63	.65	.67	.68	.70	.72	.74	.75	.77	.80	.81	.83	.85	.86	.88	.90	.92	.94	.95	.97	.99	1 01	1 03	1 04	1 06	1 08	1 10	18
19	.57	.59	.61	.63	.65	.67	.68	.70	.72	.74	.76	.78	.80	.82	.84	.86	.87	.89	.91	.93	.95	.97	.99	1.01	1.03	1.05	1 06	1 08	1 10	1.12	1 14	1 16	19
20	.60	.62	.64	.66	.68	.70	.72	.74	.76	.78	.80	.82	.84	.86	.88	.90	.92	.94	.96	.98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1 14	1 16	1 18	1 20	1 22	20
21	.63	.66	.67	.69	.71	.74	.76	.78	.80	.82	.84	.86	.88	.90	.93	.95	.97	.99	1.01	1.03	1.05	1.07	1.09	1 11	1.13	1.16	1 18	1.20	1 22	1 24	1 26	1 28	21
22	.66	.69	.70	.73	.75	.77	.79	.81	.84	.86	.88	.90	.92	.95	.97	.99	1.01	1.03	1.06	1.08	1.10	1.12	1.14	1.17	1.19	1.21	1.23	1.25	1 28	1 30	1 32	1 34	22
23	.69	.72	.74	.76	.78	.81	.83	.85	.87	.90	.92	.94	.97	.99	1.02	1.04	1.06	1.08	1.10	1.13	1.15	1.17	1.20	1.22	1.24	1 27	1.29	1 31	1.33	1 36	1 38	1 40	23
24	.72	.74	.77	.79	.82	.84	.86	.89	.91	.94	.96	.98	1.01	1.03	1.06	1.08	1.10	1.13	1.15	1.18	1.20	1.22	1.25	1.27	1.30	1 32	1.34	1.37	1 39	1 42	1 44	1 46	24
25	.75	.78	.80	.83	.85	.88	.90	.93	.95	.98	1.00	1.03	1.05	1.08	1.10	1.13	1.15	1.18	1.20	1.23	1.25	1.28	1.30	1.33	1.35	1.38	1 40	1 43	1 45	1 48	1 50	1 53	25
26	78	.81	.83	.86	.88	.91	.94	.96	.99	1.01	1.04	1.07	1.09	1.12	1.15	1.17	1.20	1.22	1.25	1.27	1.30	1.33	1.35	1.38	1 40	1.43	1 46	1 48	1 51	1 53	1 56	1 58	26
27	.81	.84	.86	.89	.92	.95	.97	1.00	1.03	1.05	1.08	1.11	1.13	1.16	1.19	1.22	1.24	1.27	1.30	1.32	1.35	1.38	1.40	1.43	1.46	1 49	1 51	1 54	1 57	1 59	1 62	1 65	27
28	.84	.87	.90	.92	.95	.98	1.01	1.04	1.06	1.09	1.12	1.15	1.17	1.20	1.24	1.26	1.29	1.32	1.34	1.37	1.40	1.43	1.46	1.48	1.51	1 54	1.57	1 60	1 62	1 65	1 68	1 71	28
29	.87	.89	.93	.96	.99	1.02	1.04	1.07	1.10	1.13	1.16	1.19	1.22	1.25	1.28	1.31	1.33	1.36	1.39	1.42	1.45	1.48	1.51	1.54	1.57	1.60	1 62	1 65	1 68	1 71	1 74	1 77	29
30	.90	.93	.96	.99	1.02	1.05	1.08	1.11	1.14	1.17	1.20	1.23	1.26	1.29	1.32	1.35	1.38	1.41	1.44	1.47	1.50	1.53	1.56	1.59	1.62	1.65	1 68	1.71	1 74	1 77	1 80	1 83	30
31	.93	.98	.99	1.02	1.05	1.09	1.12	1.15	1.18	1.21	1.24	1.27	1.30	1.33	1.37	1.40	1.43	1.46	1.49	1.52	1.55	1.58	1.61	1.64	1.67	1.71	1.74	1.77	1.80	1.83	1.86	1.89	31
32	96	1.01	1.02	1.06	1.09	1.12	1.15	1.18	1.22	1.25	1.28	1.31	1.34	1.37	1.41	1.44	1.47	1.50	1.54	1.57	1.60	1.63	1.66	1.70	1.73	1.76	1.79	1.82	1.86	1.89	1.92	1.95	32
33	.99	1.04	1.06	1.09	1.12	1.16	1.19	1.22	1.25	1.29	1.32	1.35	1.39	1.42	1.46	1.49	1.52	1.55	1.58	1.62	1.65	1.68	1.72	1.75	1.78	1.82	1.85	1.88	1.91	1.95	1.98	2.01	33
Unit values	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	Unit values
	Selling rate in cents																																

Unit values	Selling rate in cents 3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	Unit values
34	1.02	1.07	1.09	1.12	1.16	1.19	1.22	1.26	1.29	1.33	1.36	1.39	1.43	1.46	1.50	1.53	1.56	1.60	1.63	1.67	1.70	1.73	1.77	1.80	1.84	1.87	1.90	1.94	1.97	2 01	2.04	2 07	34
35	1.05	1.09	1.12	1.16	1.19	1.23	1.26	1.30	1.33	1.37	1.40	1.44	1.47	1.51	1.54	1.58	1.61	1.65	1.68	1.72	1.75	1.79	1.82	1.86	1.89	1.93	1.96	2.00	2.03	2 07	2.10	2.14	35
36	1.08	1.12	1.15	1.19	1.22	1.26	1.30	1.33	1.37	1.40	1.44	1.48	1.51	1.55	1.59	1.62	1.67	1.69	1.73	1.76	1.80	1.84	1.87	1.91	1.94	1.98	2.02	2.05	2.09	2.12	2.16	2.20	36
37	1.11	1.15	1.18	1.22	1.26	1.30	1.33	1.37	1.41	1.44	1.48	1.52	1.55	1.59	1.63	1.67	1.71	1.74	1.78	1.81	1.85	1.89	1.92	1.96	2.00	2.04	2.07	2.11	2.15	2.18	2.22	2 26	37
38	1.14	1.18	1.22	1.25	1.29	1.33	1.37	1.41	1.45	1.48	1.52	1.56	1.59	1.63	1.68	1.71	1.76	1.79	1.82	1.86	1.90	1.94	1.98	2.01	2.05	2.09	2.13	2.17	2.20	2.24	2.28	2 32	38
39	1.17	1.21	1.25	1.29	1.33	1.37	1.40	1.44	1.48	1.52	1.56	1.60	1.64	1.68	1.72	1.76	1.80	1.83	1.87	1.91	1.95	1.99	2.03	2.07	2 11	2.15	2.18	2.22	2.26	2 30	2 34	2 38	39
40	1.20	1.24	1.28	1.32	1.36	1.40	1.44	1.48	1.52	1.56	1.60	1.64	1.68	1.72	1.76	1.80	1.84	1.88	1.92	1.96	2.00	2.04	2.08	2.12	2.16	2.20	2.24	2.28	2.32	2.36	2 40	2 44	40
41	1.23	1.27	1.31	1.35	1.39	1.44	1.48	1.52	1.56	1.60	1.64	1.68	1.72	1.76	1.81	1.85	1.89	1.93	1.97	2.01	2.05	2.09	2.13	2.17	2.21	2.26	2.30	2.34	2.38	2 42	2 46	2 50	41
42	1.26	1.30	1.34	1.39	1.43	1.47	1.51	1.55	1.60	1.64	1.68	1.72	1.76	1.81	1.85	1.89	1.93	1.97	2.02	2.06	2.10	2.14	2.18	2.23	2.27	2.31	2.35	2.39	2.44	2 48	2 52	2 56	42
43	1.29	1.33	1.38	1.42	1.46	1.51	1.55	1.59	1.63	1.68	1.72	1.76	1.81	1.85	1.90	1.94	1.98	2.02	2.06	2.11	2.15	2.19	2.24	2.28	2.32	2.37	2.41	2.45	2.49	2.54	2.58	2 62	43
44	1 32	1.36	1.41	1.45	1.49	1.54	1.58	1.63	1.66	1.72	1.76	1.80	1.85	1.89	1.94	1.98	2.02	2.07	2.11	2.16	2.20	2.24	2.29	2.34	2.38	2.42	2.46	2 51	2.55	2.60	2.64	2.68	44
45	1.35	1.40	1.44	1.49	1.53	1.58	1.62	1.67	1.71	1.76	1.80	1.85	1.89	1.94	1.98	2.03	2.07	2.12	2.16	2.21	2.25	2.30	2.34	2.39	2.43	2.48	2.52	2.57	2.61	2.66	2.70	2 75	45
46	1.38	1.43	1.47	1.52	1.56	1.61	1.66	1.70	1.75	1.79	1.84	1.89	1.93	1.98	2.03	2.07	2.12	2.16	2.21	2.25	2.30	2.35	2.39	2.44	2.48	2.53	2.58	2.62	2.67	2.71	2.76	2.81	46
47	1.41	1.46	1.50	1.55	1.60	1.65	1.69	1.74	1.79	1.83	1.88	1.93	1.97	2.02	2.07	2.12	2.16	2.21	2.26	2.30	2.35	2.40	2.44	2.49	2.54	2.59	2.63	2.68	2.73	2.77	2.82	2 87	47
48	1.44	1.49	1.54	1.58	1.63	1.68	1.73	1.78	1.82	1.87	1.92	1.97	2.01	2.06	2.12	2.16	2.21	2.26	2.30	2.35	2.40	2.45	2.50	2.54	2.59	2.64	2.69	2.74	2.78	2.83	2.88	2 93	48
49	1.47	1.52	1.57	1.62	1.67	1.72	1.76	1.81	1.86	1.91	1.96	2.01	2.06	2.11	2.16	2.21	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.74	2.79	2.84	2.89	2.94	2 99	49
50	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3 05	50
51	1.53	1.58	1.63	1.68	1.73	1.79	1.84	1.89	1.94	1.99	2.04	2.09	2.14	2.19	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.81	2.86	2.91	2.96	3.01	3 06	3 11	51
52	1.56	1.61	1.66	1.72	1.77	1.82	1.87	1.92	1.98	2.03	2.08	2.13	2.18	2.24	2.29	2.34	2.39	2.44	2.50	2.55	2.60	2.65	2.70	2.76	2.81	2.86	2.91	2.96	3.02	3.07	3.12	3.17	52
53	1.59	1.64	1.70	1.75	1.80	1.86	1.91	1.96	2.01	2.07	2.12	2.17	2.23	2.28	2.34	2.39	2.44	2.49	2.54	2.60	2.65	2.70	2.76	2.81	2.86	2.92	2.97	3.02	3.07	3.13	3.18	3 23	53
54	1.62	1.67	1.73	1.78	1.84	1.89	1.94	2.00	2.05	2.11	2.16	2.21	2.27	2.32	2.38	2.43	2.48	2.54	2.59	2.65	2.70	2.75	2.81	2.86	2.92	2.97	3.02	3.08	3 13	3.19	3.24	3 29	54
55	1.65	1.71	1.76	1.82	1.87	1.93	1.98	2.04	2.09	2.15	2.20	2.26	2.31	2.37	2.42	2.48	2.53	2.59	2.64	2.70	2.75	2.81	2.86	2.92	2.97	3.03	3.08	3.14	3.19	3.25	3.30	3.36	55
56	1.68	1.74	1.79	1.85	1.90	1.96	2.02	2.07	2.13	2.18	2.24	2.30	2.35	2.41	2.47	2.52	2.58	2.63	2.69	2.74	2.80	2.86	2.91	2.97	3.02	3.08	3.14	3.19	3.25	3.30	3.36	3 42	56
57	1.71	1.77	1.82	1.88	1.94	2.00	2.05	2.11	2.17	2.22	2.28	2.34	2.39	2.45	2.51	2.57	2.62	2.68	2.74	2.79	2.85	2.91	2.96	3.02	3.08	3.14	3.19	3.25	3.31	3.36	3.42	3.48	57
58	1.74	1.80	1.86	1.91	1.97	2.03	2.09	2.15	2.20	2.26	2.32	2.38	2.43	2.49	2.56	2.61	2.67	2.73	2.78	2.84	2.90	2.96	3.02	3.07	3.13	3.19	3.25	3.31	3.36	3.42	3.48	3.54	58
59	1.77	1.83	1.89	1.95	2.01	2.07	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.71	2.77	2.83	2.89	2.95	3.01	3.07	3.13	3.19	3.25	3.30	3.36	3.42	3.48	3.54	3 60	59
60	1.80	1.86	1.92	1.98	2.04	2.10	2.16	2.22	2.28	2.34	2.40	2.46	2.52	2.58	2.64	2.70	2.76	2.82	2.88	2.94	3.00	3.06	3.12	3 18	3.24	3.30	3.36	3.42	3 48	3 54	3.60	3 66	60
61	1.83	1.89	1.95	2.01	2.07	2.14	2.20	2.26	2.32	2.38	2.44	2.50	2.56	2.62	2.69	2.75	2.81	2.87	2.93	2.99	3.05	3.11	3.17	3.23	3.29	3.36	3 42	3.48	3.54	3 60	3.66	3 72	61
62	1.86	1.92	1.98	2.05	2.11	2.17	2.23	2.29	2.36	2.42	2.48	2.54	2.60	2.67	2.73	2.79	2.85	2.91	2.98	3.04	3.10	3.16	3.22	3 29	3 35	3.41	3.47	3.53	3.60	3.66	3.72	3 78	62
63	1.89	1.95	2.02	2.08	2.14	2.21	2.27	2.33	2.39	2.46	2.52	2.58	2.65	2.71	2.78	2.84	2.90	2.96	3.02	3.09	3.15	3.21	3.28	3.34	3.40	3.47	3.53	3.59	3.65	3.72	3.78	3.84	63
64	1.92	1.98	2.05	2.11	2.18	2.24	2.30	2.37	2.43	2.50	2.56	2.62	2.69	2.75	2.82	2.88	2.94	3.01	3.07	3.14	3.20	3.26	3.33	3 39	3.46	3.52	3.58	3.65	3.71	3.78	3.84	3.90	64
65	1.95	2.02	2.08	2.15	2.21	2.28	2.34	2.41	2.47	2.54	2.60	2.67	2.73	2.80	2.86	2.93	2.99	3.06	3.12	3.19	3.25	3.32	3.38	3.45	3.51	3.58	3.64	3.71	3.77	3.84	3.90	3.97	65
66	1.98	2.05	2.11	2.18	2.24	2.31	2.38	2.44	2.51	2.57	2.64	2.71	2.77	2.84	2.91	2.97	3.04	3.10	3.17	3.23	3.30	3.37	3.43	3.50	3.56	3.63	3.70	3.76	3.83	3.89	3.96	4.03	66
Unit values	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	Unit values

Selling rate in cents



LET US STRIVE TO FINISH THE WORK WE ARE IN, TO BIND UP THE NATION'S WOUNDS, TO CARE FOR HIM WHO SHALL HAVE BORNE THE BATTLE, TO DO ALL WHICH MAY ACHIEVE AND CHERISH A JUST AND LASTING PEACE.

FROM ABRAHAM LINCOLN'S SECOND INAUGURAL ADDRESS.
MARCH 4, 1865.

Arrow Engraving Company* INC.
• PHOTO • ENGRAVERS •
240 W. 40TH ST., NEW YORK 18, N.Y.
WILLIAM R. DRIVER • ALFRED A. MEYER
*FINEST COLOR REPRODUCTIONS

COURTESY OF SIMPLEX TEXTURED REPRODUCTIONS, INC.

Unit values	Selling rate in cents 3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	Unit values
67	2.01	2.08	2.14	2.21	2.28	2.35	2.41	2.48	2.55	2.61	2.68	2.75	2.81	2.88	2.95	3.02	3.08	3.15	3.22	3.28	3.35	3.42	3.48	3.55	3.62	3.69	3.75	3.82	3.89	3.95	4.02	4.09	67
68	2.04	2.11	2.18	2.24	2.31	2.38	2.45	2.52	2.58	2.65	2.72	2.79	2.85	2.92	3.00	3.06	3.13	3.20	3.26	3.33	3.40	3.47	3.54	3.60	3.67	3.74	3.81	3.88	3.94	4.01	4.08	4.15	68
69	2.07	2.14	2.21	2.28	2.35	2.42	2.48	2.55	2.62	2.69	2.76	2.83	2.90	2.97	3.04	3.11	3.17	3.24	3.31	3.38	3.45	3.52	3.59	3.66	3.73	3.80	3.86	3.93	4.00	4.07	4.14	4.21	69
70	2.10	2.17	2.24	2.31	2.38	2.45	2.52	2.59	2.66	2.73	2.80	2.87	2.94	3.01	3.08	3.15	3.22	3.29	3.36	3.43	3.50	3.57	3.64	3.71	3.78	3.85	3.92	3.99	4.06	4.13	4.20	4.27	70
71	2.13	2.20	2.27	2.34	2.41	2.49	2.56	2.63	2.70	2.77	2.84	2.91	2.98	3.05	3.13	3.20	3.27	3.34	3.41	3.48	3.55	3.62	3.69	3.76	3.83	3.91	3.98	4.05	4.12	4.19	4.26	4.33	71
72	2.16	2.23	2.30	2.38	2.45	2.52	2.59	2.66	2.74	2.81	2.88	2.95	3.02	3.10	3.17	3.24	3.31	3.38	3.46	3.53	3.60	3.67	3.74	3.82	3.89	3.96	4.03	4.10	4.18	4.25	4.32	4.39	72
73	2.19	2.26	2.34	2.41	2.48	2.56	2.62	2.70	2.77	2.85	2.92	2.99	3.07	3.14	3.22	3.29	3.36	3.43	3.50	3.58	3.65	3.72	3.80	3.87	3.94	4.02	4.09	4.16	4.23	4.31	4.39	4.45	73
74	2.22	2.29	2.37	2.44	2.52	2.59	2.66	2.74	2.81	2.89	2.96	3.03	3.11	3.18	3.26	3.33	3.40	3.48	3.55	3.63	3.70	3.77	3.85	3.92	4.00	4.07	4.14	4.22	4.29	4.37	4.44	4.51	74
75	2.25	2.33	2.40	2.48	2.55	2.63	2.70	2.78	2.85	2.93	3.00	3.08	3.15	3.23	3.30	3.38	3.45	3.53	3.60	3.68	3.75	3.83	3.90	3.98	4.05	4.13	4.20	4.28	4.35	4.43	4.50	4.58	75
76	2.28	2.36	2.43	2.51	2.58	2.66	2.74	2.81	2.89	2.96	3.04	3.12	3.19	3.27	3.35	3.42	3.50	3.57	3.65	3.72	3.80	3.88	3.95	4.03	4.10	4.18	4.26	4.33	4.41	4.48	4.56	4.64	76
77	2.31	2.39	2.46	2.54	2.62	2.70	2.77	2.85	2.93	3.00	3.08	3.16	3.23	3.31	3.39	3.47	3.54	3.62	3.70	3.77	3.85	3.93	4.00	4.08	4.16	4.24	4.31	4.39	4.47	4.54	4.62	4.70	77
78	2.34	2.42	2.50	2.57	2.65	2.73	2.81	2.89	2.96	3.04	3.12	3.20	3.27	3.35	3.44	3.51	3.59	3.67	3.74	3.82	3.90	3.98	4.06	4.13	4.21	4.29	4.37	4.45	4.52	4.60	4.68	4.76	78
79	2.37	2.45	2.53	2.61	2.69	2.77	2.84	2.92	3.00	3.08	3.16	3.24	3.32	3.40	3.48	3.56	3.63	3.71	3.79	3.87	3.95	4.03	4.11	4.19	4.27	4.35	4.42	4.50	4.58	4.66	4.74	4.82	79
80	2.40	2.48	2.56	2.64	2.72	2.80	2.88	2.96	3.04	3.12	3.20	3.28	3.36	3.44	3.52	3.60	3.68	3.76	3.84	3.92	4.00	4.08	4.16	4.24	4.32	4.40	4.48	4.56	4.64	4.72	4.80	4.88	80
81	2.43	2.51	2.59	2.67	2.75	2.84	2.92	3.00	3.08	3.16	3.24	3.32	3.40	3.48	3.57	3.65	3.73	3.81	3.89	3.97	4.05	4.13	4.21	4.29	4.37	4.46	4.54	4.62	4.70	4.78	4.86	4.94	81
82	2.46	2.54	2.62	2.71	2.79	2.87	2.95	3.03	3.12	3.20	3.28	3.36	3.44	3.53	3.61	3.69	3.77	3.85	3.94	4.02	4.10	4.18	4.26	4.35	4.43	4.51	4.59	4.67	4.76	4.84	4.92	5.00	82
83	2.49	2.57	2.66	2.74	2.82	2.91	2.99	3.07	3.15	3.24	3.32	3.40	3.49	3.57	3.66	3.74	3.82	3.90	3.98	4.07	4.15	4.23	4.32	4.40	4.48	4.57	4.65	4.73	4.81	4.90	4.98	5.06	83
84	2.52	2.60	2.69	2.77	2.86	2.94	3.02	3.11	3.19	3.28	3.36	3.44	3.53	3.61	3.70	3.78	3.86	3.95	4.03	4.12	4.20	4.28	4.37	4.45	4.54	4.62	4.70	4.79	4.87	4.96	5.04	5.12	84
85	2.55	2.64	2.72	2.81	2.89	2.98	3.06	3.15	3.23	3.32	3.40	3.49	3.57	3.66	3.74	3.83	3.91	4.00	4.08	4.17	4.25	4.34	4.42	4.51	4.59	4.68	4.76	4.85	4.93	5.02	5.10	5.19	85
86	2.58	2.67	2.75	2.84	2.92	3.01	3.10	3.18	3.27	3.35	3.44	3.53	3.61	3.70	3.79	3.87	3.96	4.04	4.13	4.21	4.30	4.39	4.47	4.56	4.64	4.73	4.82	4.90	4.99	5.07	5.16	5.25	86
87	2.61	2.70	2.78	2.87	2.96	3.05	3.13	3.22	3.31	3.39	3.48	3.57	3.65	3.74	3.83	3.92	4.00	4.09	4.18	4.26	4.35	4.44	4.52	4.61	4.70	4.79	4.87	4.96	5.05	5.13	5.22	5.31	87
88	2.64	2.73	2.82	2.90	2.99	3.08	3.17	3.26	3.34	3.43	3.52	3.61	3.69	3.78	3.88	3.96	4.05	4.14	4.22	4.31	4.40	4.49	4.58	4.66	4.75	4.84	4.93	5.02	5.10	5.19	5.28	5.37	88
89	2.67	2.76	2.85	2.94	3.03	3.12	3.20	3.29	3.38	3.47	3.56	3.65	3.74	3.83	3.92	4.01	4.09	4.18	4.27	4.36	4.45	4.54	4.63	4.72	4.81	4.90	4.98	5.07	5.16	5.25	5.34	5.43	89
90	2.70	2.79	2.88	2.97	3.06	3.15	3.24	3.33	3.42	3.51	3.60	3.69	3.78	3.87	3.96	4.05	4.14	4.23	4.32	4.41	4.50	4.59	4.68	4.77	4.86	4.95	5.04	5.13	5.22	5.31	5.40	5.49	90
91	2.73	2.82	2.91	3.00	3.09	3.19	3.28	3.37	3.46	3.55	3.64	3.73	3.82	3.91	4.01	4.10	4.19	4.28	4.37	4.46	4.55	4.64	4.73	4.82	4.91	5.01	5.10	5.19	5.28	5.37	5.46	5.55	91
92	2.76	2.85	2.94	3.04	3.13	3.22	3.31	3.40	3.50	3.59	3.68	3.77	3.86	3.96	4.05	4.14	4.23	4.32	4.42	4.51	4.60	4.69	4.79	4.88	4.97	5.06	5.15	5.24	5.34	5.43	5.52	5.61	92
93	2.79	2.88	2.98	3.07	3.16	3.26	3.35	3.44	3.53	3.63	3.72	3.81	3.91	4.00	4.10	4.19	4.28	4.37	4.46	4.56	4.65	4.74	4.84	4.93	5.02	5.12	5.21	5.30	5.39	5.49	5.58	5.67	93
94	2.82	2.91	3.01	3.10	3.20	3.29	3.38	3.48	3.57	3.67	3.76	3.85	3.95	4.04	4.14	4.23	4.32	4.42	4.51	4.61	4.70	4.79	4.89	4.98	5.08	5.17	5.26	5.36	5.45	5.55	5.64	5.73	94
95	2.85	2.95	3.04	3.14	3.23	3.33	3.42	3.52	3.61	3.71	3.80	3.90	3.99	4.09	4.18	4.28	4.37	4.47	4.56	4.66	4.75	4.85	4.94	5.04	5.13	5.23	5.32	5.42	5.51	5.61	5.70	5.80	95
96	2.88	2.98	3.07	3.17	3.26	3.36	3.46	3.55	3.65	3.74	3.84	3.94	4.03	4.13	4.23	4.32	4.42	4.51	4.61	4.70	4.80	4.90	4.99	5.09	5.18	5.28	5.38	5.47	5.57	5.66	5.76	5.86	96
97	2.91	3.01	3.10	3.20	3.30	3.40	3.49	3.59	3.69	3.78	3.88	3.98	4.07	4.17	4.27	4.37	4.46	4.56	4.66	4.75	4.85	4.95	5.04	5.14	5.24	5.34	5.43	5.53	5.63	5.72	5.82	5.92	97
98	2.94	3.04	3.14	3.23	3.33	3.43	3.53	3.63	3.72	3.82	3.92	4.02	4.11	4.21	4.32	4.41	4.51	4.61	4.70	4.80	4.90	5.00	5.10	5.19	5.29	5.39	5.49	5.59	5.68	5.78	5.88	5.98	98
99	2.97	3.07	3.17	3.27	3.37	3.47	3.56	3.66	3.76	3.86	3.96	4.06	4.16	4.25	4.36	4.46	4.55	4.65	4.75	4.85	4.95	5.05	5.15	5.25	5.35	5.45	5.54	5.64	5.74	5.84	5.94	6.04	99
100	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	5.00	5.10	5.20	5.30	5.40	5.50	5.60	5.70	5.80	5.90	6.00	6.10	100
Unit values	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	Unit values

Selling rate in cents



Catching the "Color" of Black and White

FINE engraving—the ability to catch all the delicate shadings of a photograph or painting—*is what makes any advertisement colorful.*

You'll always find this "color" in engravings by Harding . . . whether they're black and whites (as pictured above) . . . or whether they portray all the hues of the rainbow. For behind every Harding engraving is *over forty-two years of experience and the skill* of some of the finest artisans in the industry.

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Cowan & Dengler, Inc.	Pan American World Airways System
Davis & Geck, Inc.	Popular Science Monthly
Ellington & Company, Inc.	Sheldon, Quick & McElroy, Inc.
The M. H. Hackett Co.	

Harding Photo Engraving Company

216 WEST 18TH STREET, NEW YORK CITY

Unit values	Selling rate in cents 6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	Color selling rates .90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	Unit values
1	06	.06	06	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.08	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1 35	1 40	1 45	1 50	1
2	12	.13	.13	.13	.13	.13	.14	.14	.14	.14	.14	.15	.15	.15	1.80	1.90	2.00	2.10	2.20	2.30	2.40	2.50	2 60	2.70	2 80	2 90	3 00	2
3	.19	.19	.19	.20	.20	.20	.20	.21	.21	.21	.22	.22	.22	.23	2.70	2.85	3.00	3.15	3.30	3.45	3.60	3.75	3 90	4.05	4 20	4.35	4 50	3
4	.25	.25	.26	.26	.26	.27	.27	.28	.28	.28	.29	.29	.30	.30	3.60	3.80	4.00	4.20	4.40	4.60	4 80	5 00	5.20	5 40	5 60	5 80	6 00	4
5	.31	.32	.32	.33	.33	.34	.34	.35	.35	.36	.36	.37	.37	.38	4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6 50	6 75	7 00	7 25	7 50	5
6	.37	.38	.38	.39	.40	40	.41	.41	.42	.43	.43	.44	.44	.45	5.40	5.70	6.00	6.30	6.60	6.90	7.20	7.50	7 80	8 10	8 40	8 70	9 00	6
7	.43	.44	.45	.46	.46	.47	.48	.48	.49	.50	.50	.51	.52	.53	6.30	6.65	7.00	7.35	7.70	8.05	8.40	8 75	9.10	9.45	9 80	10.15	10 50	7
8	.50	.50	.51	.52	.53	.54	.54	.55	.56	.57	.58	.58	.59	.60	7.20	7.60	8.00	8.40	8.80	9.20	9.60	10.00	10.40	10.80	11.20	11.60	12 00	8
9	.56	.57	.58	.59	.59	.60	.61	.62	.63	.64	.65	.66	.67	.68	8.10	8.55	9.00	9.45	9.90	10.35	10.80	11.25	11.70	12.15	12.60	13.05	13 50	9
10	.62	.63	.64	.65	.66	.67	.68	.69	.70	.71	.72	.73	.74	.75	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00	14 50	15 00	10
11	.68	.69	.70	.72	.73	.74	.75	.76	.77	.78	.79	.80	.81	.83	9.90	10.45	11.00	11.55	12.10	12.65	13.20	13.75	14.30	14.85	15 40	15 95	16 50	11
12	74	.76	.77	.78	.79	.80	.82	.83	.84	.85	.86	.88	.89	.90	10.80	11.40	12.00	12.60	13.20	13.80	14.40	15.00	15.60	16.20	16.80	17.40	18 00	12
13	.81	.82	.83	.85	.86	.87	.88	.90	.91	.92	.94	.95	.96	.98	11.70	12.35	13.00	13.65	14.30	14.95	15.60	16.25	16.90	17.55	18.20	18 85	19.50	13
14	.87	.88	.90	.91	.92	.94	.95	.97	.98	.99	1.01	1.02	1.04	1.05	12.60	13.30	14.00	14.70	15.40	16.10	16.80	17.50	18.20	18.90	19.60	20 30	21 00	14
15	.93	.95	.96	.98	.99	1.01	1.02	1.04	1.05	1.07	1.08	1.10	1.11	1.13	13.50	14.25	15.00	15.75	16.50	17.25	18.00	18 75	19.50	20.25	21.00	21 75	22 50	15
16	.99	1.01	1.02	1.04	1.06	1.07	1.09	1.10	1.12	1.14	1.15	1.17	1.18	1.20	14.40	15.20	16.00	16.80	17.60	18.40	19.20	20.00	20.80	21.60	22.40	23 20	24 00	16
17	1.05	1.07	1.09	1.11	1.12	1.14	1.16	1.17	1.19	1.21	1.22	1.24	1.26	1.28	15.30	16.15	17.00	17.85	18.70	19.55	20.40	21.25	22.10	22.95	23.80	24 65	25 50	17
18	1.12	1.13	1.15	1.17	1.19	1.21	1.22	1.24	1.26	1.28	1.30	1.31	1.33	1.35	16.20	17.10	18.00	18.90	19.80	20.70	21.60	22.50	23.40	24.30	25 20	26 10	27 00	18
19	1.18	1.20	1.22	1.24	1.25	1.27	1.29	1.31	1.33	1.35	1.37	1.39	1.41	1.43	17.10	18.05	19.00	19.95	20.90	21.85	22.80	23.75	24.70	25.65	26.60	27.55	28.50	19
20	1.24	1.26	1.28	1.30	1.32	1.34	1.36	1.38	1.40	1.42	1.44	1.46	1.48	1.50	18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	29 00	30 00	20
21	1.30	1.32	1.34	1.37	1.39	1.41	1.43	1.45	1.47	1.49	1.51	1.53	1.55	1.58	18.90	19.95	21.00	22.05	23.10	24.15	25.20	26.25	27.30	28 35	29.40	30 45	31 50	21
22	1.36	1.39	1.41	1.43	1.45	1.47	1.50	1.52	1.54	1.56	1.58	1.61	1.63	1.65	19.80	20.90	22.00	23.10	24.20	25.30	26.40	27.50	28.60	29.70	30 80	31 90	33 00	22
23	1 43	1.45	1.47	1.50	1.52	1.54	1.56	1.59	1.61	1.63	1.66	1.68	1.70	1.72	20.70	21.85	23.00	24.15	25.30	26.45	27.60	28.75	29 90	31 05	32 20	33 35	34 50	23
24	1.49	1.51	1.54	1.56	1.58	1.61	1.63	1.66	1.68	1.70	1.73	1.75	1.78	1.80	21.60	22.80	24.00	25.20	26.40	27.60	28.80	30.00	31.20	33.40	32 60	35.80	36 00	24
25	1.55	1.58	1.60	1.63	1.65	1.68	1.70	1.73	1.75	1.78	1.80	1.83	1.85	1.88	22.50	23.75	25.00	26.25	27.50	28.75	30.00	31.25	32.50	33 75	35 00	36 25	37 50	25
26	1.61	1.64	1.66	1.69	1.72	1.74	1.77	1.79	1.82	1.85	1.87	1.90	1.92	1.95	23.40	24.70	26.00	27.30	28.60	29.90	31.20	32.50	33.80	35.10	36.40	37 70	39 00	26
27	1.67	1.70	1.73	1.76	1.78	1.81	1.84	1.86	1.89	1.92	1.94	1.97	2.00	2.03	24.30	25.65	27.00	28.35	29.70	31.05	32.40	33.75	35.10	36.45	37 80	39.15	40.50	27
28	1.74	1.76	1.79	1.82	1.85	1.88	1.90	1.93	1.96	1.99	2.02	2.04	2.07	2.10	25.20	26.60	28.00	29.40	30.80	32.20	33.60	35.00	36.40	37.80	39.20	40 60	42.00	28
29	1.80	1.83	1.86	1.89	1.91	1.94	1.97	2.00	2.03	2.06	2.09	2.12	2.15	2.18	26.10	27.55	29.00	30.45	31.90	33.35	34.80	36.25	37.70	39.15	40.60	42.05	43 50	29
30	1.86	1.89	1.92	1.95	1.98	2.01	2.04	2.07	2.10	2.13	2.16	2.19	2.22	2.25	27.00	28.50	30.00	31.50	33.00	34.50	36.00	37.50	39.00	40.50	42.00	43.50	45 00	30
31	1.92	1.95	1.98	2.02	2.05	2.08	2.11	2.14	2.17	2.20	2.23	2.26	2.29	2.33	27.90	29.45	31.00	32.55	34.10	35.65	37.20	38.75	40.30	41.85	43.40	44.95	46.50	31
32	1.98	2.02	2.05	2.08	2.11	2.14	2.18	2.21	2.24	2.27	2.30	2.34	2.37	2.40	28.80	30.40	32.00	33.60	35.20	36.80	38.40	40.00	41.60	43.20	44.80	46.40	48 00	32
33	2.05	2.08	2.11	2.14	2.18	2.21	2.24	2.28	2.31	2.34	2.38	2.41	2.44	2.48	29.70	31.35	33.00	34.65	36.30	37.95	39.60	41.25	42.90	44.55	46.20	47.85	49 50	33
Unit values	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	Unit values
	Selling rate in cents														Color selling rates													

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25 years ago wasn't exactly the horse and buggy days, yet not so far from them as you might remember. When you bought yours ready rolled, you "walked a mile" and found "They're toasted." Today's Old Gold was still a buried treasure. Radio was a late-at-night earphone experience to catch the midnight "beep" from KDKA.

Those were the days we all spent learning—learning what could be done and discovering what the other fellow wanted. Hence we pause to salute advertising and publishing as it is today for their contributions to our nation's economic picture. We salute the allied industries in the graphic arts (in all modesty, yet sense our pride) for accepting the challenge these industries have ceaselessly presented.

Today, as always, we plan for the future. Today has but recently seen us expand within our own building onto three new floors. And yet today our work is the sum of a quarter-century of experience in photo-engraving craftsmanship.



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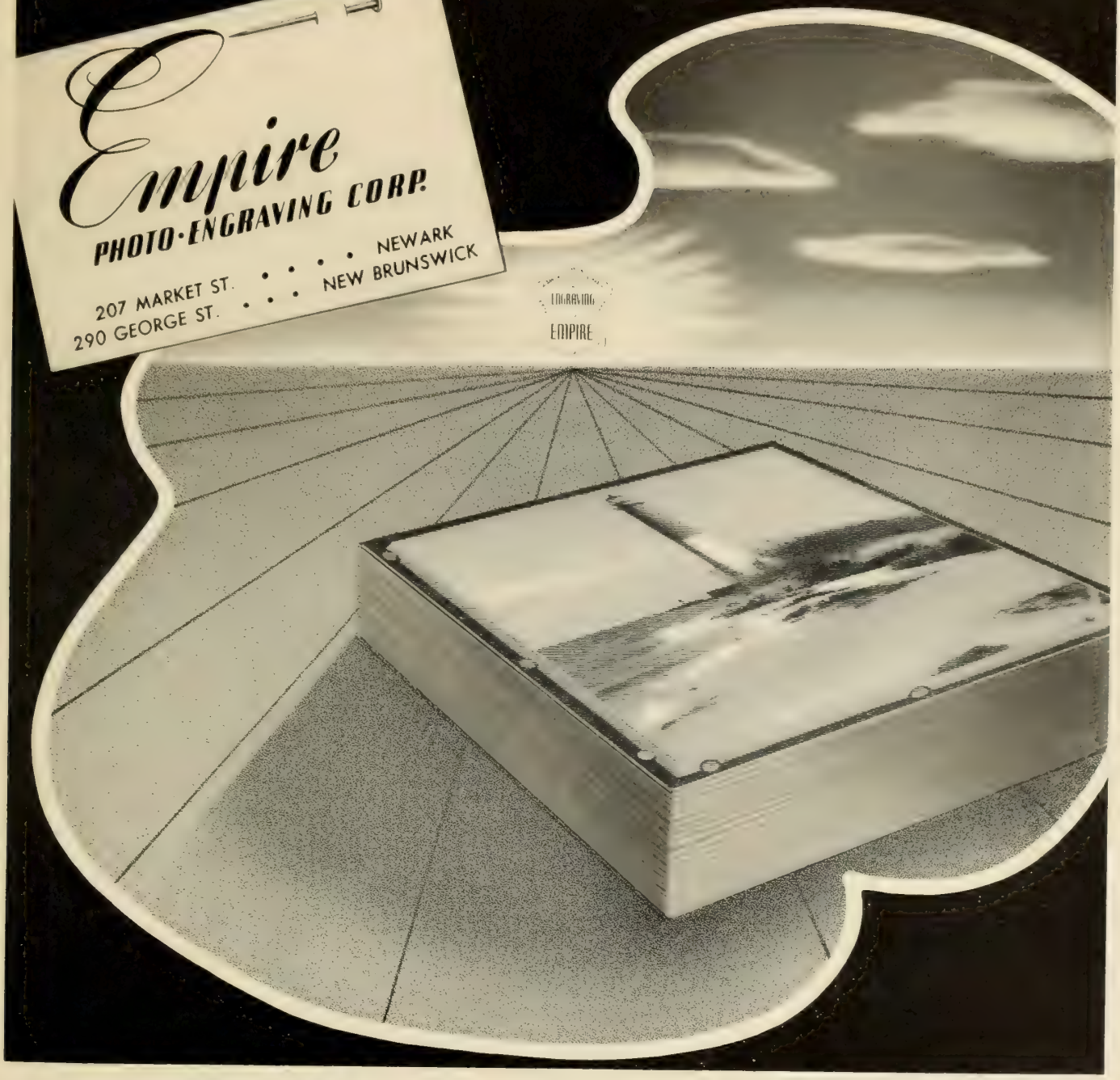
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Unit values	Selling rate in cents 6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	Color selling rates .90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	Unit values
34	2.11	2.14	2.18	2.21	2.24	2.28	2.31	2.35	2.38	2.41	2.45	2.48	2.52	2.55	30.60	32.30	34.00	35.70	37.40	39.10	40.80	42.50	44.20	45.90	47.60	49.30	51.00	34
35	2.17	2.21	2.24	2.28	2.31	2.35	2.38	2.42	2.45	2.49	2.52	2.56	2.59	2.63	31.50	33.25	35.00	36.75	38.50	40.25	42.00	43.75	45.50	47.25	49.00	50.75	52.50	35
36	2.23	2.27	2.30	2.34	2.38	2.41	2.45	2.48	2.52	2.56	2.59	2.63	2.66	2.70	32.40	34.20	36.00	37.80	39.60	41.40	43.20	45.00	46.80	48.60	50.40	52.20	54.00	36
37	2.29	2.33	2.37	2.40	2.44	2.48	2.52	2.55	2.59	2.63	2.66	2.70	2.74	2.78	33.30	35.15	37.00	38.85	40.70	42.55	44.40	46.25	48.10	49.95	51.80	53.65	55.50	37
38	2.36	2.39	2.43	2.47	2.51	2.55	2.58	2.62	2.66	2.70	2.74	2.77	2.81	2.85	34.20	36.10	38.00	39.90	41.80	43.70	45.60	47.50	49.40	51.30	53.20	55.10	57.00	38
39	2.42	2.46	2.50	2.53	2.57	2.61	2.65	2.67	2.73	2.77	2.81	2.85	2.89	2.93	35.10	37.05	39.00	40.95	42.90	44.85	46.80	48.75	50.70	52.65	54.60	56.55	58.50	39
40	2.48	2.52	2.56	2.60	2.64	2.68	2.72	2.76	2.80	2.84	2.88	2.92	2.96	3.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00	50.00	52.00	54.00	56.00	58.00	60.00	40
41	2.54	2.58	2.62	2.66	2.71	2.75	2.79	2.83	2.87	2.91	2.95	2.99	3.03	3.08	36.90	38.95	41.00	43.05	45.10	47.15	49.20	51.25	53.30	55.35	57.40	59.45	61.50	41
42	2.60	2.65	2.69	2.73	2.77	2.81	2.86	2.90	2.94	2.98	3.02	3.07	3.11	3.15	37.80	39.90	42.00	44.10	46.20	48.30	50.40	52.50	54.60	56.70	58.80	60.90	63.00	42
43	2.67	2.71	2.75	2.79	2.84	2.88	2.92	2.97	3.01	3.05	3.10	3.14	3.18	3.23	38.70	40.85	43.00	45.15	47.30	49.45	51.60	53.75	55.90	58.05	60.20	62.35	64.50	43
44	2.73	2.77	2.82	2.86	2.90	2.95	2.99	3.04	3.08	3.12	3.17	3.22	3.26	3.30	39.60	41.80	44.00	46.20	48.40	50.60	52.80	55.00	57.20	59.40	61.60	63.80	66.00	44
45	2.79	2.84	2.88	2.93	2.97	3.02	3.06	3.11	3.15	3.20	3.24	3.29	3.33	3.38	40.50	42.75	45.00	47.25	49.50	51.75	54.00	56.25	58.50	60.75	63.00	65.25	67.50	45
46	2.85	2.90	2.94	2.99	3.04	3.08	3.13	3.17	3.22	3.27	3.31	3.36	3.40	3.45	41.40	43.70	46.00	48.30	50.60	52.90	55.20	57.50	59.80	62.10	64.40	66.70	69.00	46
47	2.91	2.96	3.01	3.05	3.10	3.15	3.20	3.24	3.29	3.34	3.38	3.44	3.48	3.53	42.30	44.65	47.00	49.35	51.70	54.05	56.40	58.75	61.10	63.45	65.80	68.15	70.50	47
48	2.98	3.02	3.07	3.12	3.17	3.22	3.26	3.31	3.36	3.41	3.46	3.51	3.55	3.60	43.20	45.60	48.00	50.40	52.80	55.20	57.60	60.00	62.40	64.80	67.20	69.60	72.00	48
49	3.04	3.09	3.14	3.18	3.23	3.28	3.33	3.38	3.43	3.48	3.53	3.58	3.63	3.68	44.10	46.55	49.00	51.45	53.90	56.35	58.80	61.25	63.70	66.15	68.60	71.05	73.50	49
50	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.55	3.60	3.65	3.70	3.75	45.00	47.50	50.00	52.50	55.00	57.50	60.00	62.50	65.00	67.50	70.00	72.50	75.00	50
51	3.16	3.21	3.26	3.31	3.37	3.42	3.47	3.52	3.57	3.62	3.67	3.72	3.77	3.83	45.90	48.45	51.00	53.55	56.10	58.65	61.20	63.75	66.30	68.85	71.40	73.95	76.50	51
52	3.22	3.28	3.33	3.38	3.43	3.48	3.54	3.59	3.64	3.69	3.74	3.80	3.85	3.90	46.80	49.40	52.00	54.60	57.20	59.80	62.40	65.00	67.60	70.20	72.80	75.40	78.00	52
53	3.29	3.34	3.39	3.44	3.50	3.55	3.60	3.66	3.71	3.76	3.82	3.87	3.92	3.98	47.70	50.35	53.00	55.65	58.30	60.95	63.60	66.25	68.90	71.55	74.20	76.85	79.50	53
54	3.35	3.40	3.46	3.51	3.56	3.62	3.67	3.73	3.78	3.83	3.89	3.95	4.00	4.05	48.60	51.30	54.00	56.70	59.40	62.10	64.80	67.50	70.20	72.90	75.60	78.30	81.00	54
55	3.41	3.47	3.52	3.57	3.63	3.69	3.74	3.80	3.85	3.90	3.96	4.02	4.07	4.13	49.50	52.25	55.00	57.75	60.50	63.25	66.00	68.75	71.50	74.25	77.00	79.75	82.50	55
56	3.47	3.53	3.58	3.64	3.70	3.75	3.81	3.86	3.92	3.97	4.03	4.09	4.14	4.20	50.40	53.20	56.00	58.80	61.60	64.40	67.20	70.00	72.80	75.60	78.40	81.20	84.00	56
57	3.53	3.59	3.65	3.70	3.76	3.82	3.88	3.93	3.99	4.04	4.10	4.16	4.22	4.28	51.30	54.15	57.00	59.85	62.70	65.55	68.40	71.25	74.10	76.95	79.80	82.65	85.50	57
58	3.60	3.65	3.71	3.77	3.83	3.89	3.94	4.00	4.06	4.11	4.18	4.23	4.29	4.35	52.20	55.10	58.00	60.90	63.80	66.70	69.60	72.50	75.40	78.30	81.20	84.10	87.00	58
59	3.66	3.72	3.78	3.83	3.89	3.95	4.01	4.07	4.13	4.18	4.25	4.31	4.37	4.43	53.10	56.05	59.00	61.95	64.90	67.85	70.80	73.75	76.70	79.65	82.60	85.55	88.50	59
60	3.72	3.78	3.84	3.90	3.96	4.02	4.08	4.14	4.20	4.26	4.32	4.38	4.44	4.50	54.00	57.00	60.00	63.00	66.00	69.00	72.00	75.00	78.00	81.00	84.00	87.00	90.00	60
61	3.78	3.84	3.90	3.96	4.03	4.09	4.15	4.21	4.27	4.33	4.39	4.45	4.51	4.58	54.90	57.95	61.00	64.05	67.10	70.15	73.20	76.25	79.30	82.35	85.40	88.45	91.50	61
62	3.84	3.91	3.97	4.03	4.09	4.15	4.22	4.28	4.34	4.40	4.46	4.53	4.59	4.65	55.80	58.90	62.00	65.10	68.20	71.30	74.40	77.50	80.60	83.70	86.80	89.90	93.00	62
63	3.91	3.97	4.03	4.09	4.16	4.22	4.28	4.35	4.41	4.47	4.54	4.60	4.66	4.73	56.70	59.85	63.00	66.15	69.30	72.45	75.60	78.75	81.90	85.05	88.20	91.35	94.50	63
64	3.97	4.03	4.10	4.16	4.22	4.29	4.35	4.42	4.48	4.54	4.61	4.67	4.74	4.80	57.60	60.80	64.00	67.20	70.40	73.60	76.80	80.00	83.20	86.40	89.60	92.80	96.00	64
65	4.03	4.10	4.16	4.22	4.29	4.36	4.42	4.49	4.55	4.61	4.68	4.75	4.81	4.87	58.50	61.75	65.00	68.25	71.50	74.75	78.00	81.25	84.50	87.75	91.00	94.25	97.50	65
66	4.09	4.16	4.22	4.29	4.36	4.42	4.49	4.55	4.62	4.68	4.75	4.82	4.88	4.95	59.40	62.70	66.00	69.30	72.60	75.90	79.20	82.50	85.80	89.10	92.40	95.70	99.00	66
Unit values	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	Unit values
	Selling rate in cents														Color selling rates													

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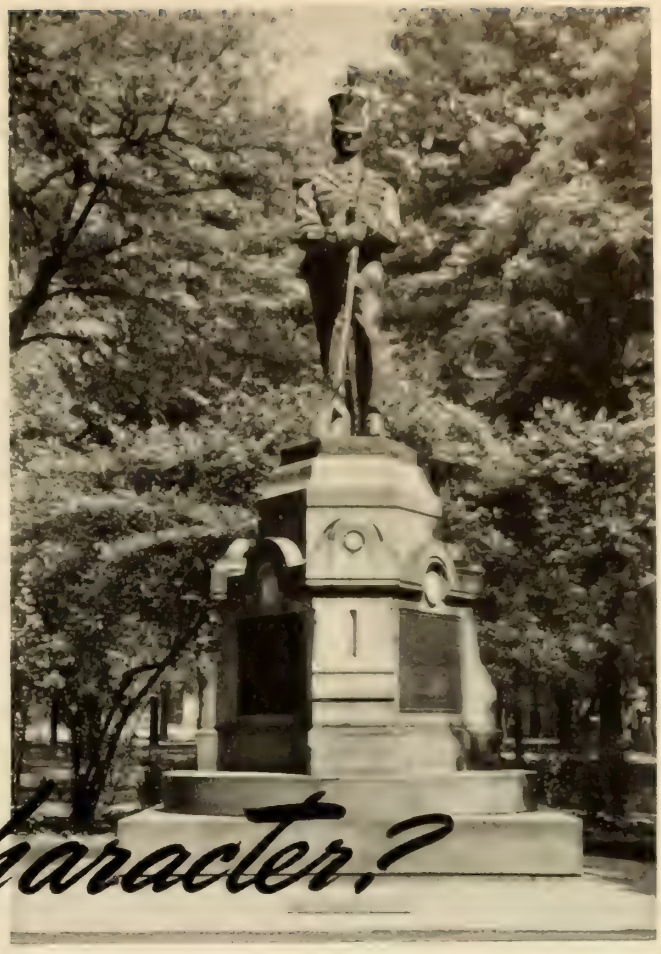


Unit values	Selling rate in cents														Color selling rates											Unit values
	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	
67	4.15	4.22	4.29	4.35	4.42	4.49	4.56	4.62	4.69	4.75	4.82	4.89	4.96	5.03	60.30	63.65	67.00	70.35	73.70	77.05	80.40	83.75	87.10	90.45	93.80	97.15	100.50	67
68	4.22	4.28	4.35	4.42	4.49	4.56	4.62	4.69	4.76	4.82	4.90	4.96	5.03	5.10	61.20	64.60	68.00	71.40	74.80	78.20	81.60	85.00	88.40	91.80	95.20	98.60	102.00	68
69	4.28	4.35	4.42	4.48	4.55	4.62	4.69	4.76	4.83	4.89	4.97	5.04	5.11	5.18	62.10	65.55	69.00	72.45	75.90	79.35	82.80	86.25	89.70	93.15	96.60	100.05	103.50	69
70	4.34	4.41	4.48	4.55	4.62	4.69	4.76	4.83	4.90	4.97	5.04	5.11	5.18	5.25	63.00	66.50	70.00	73.50	77.00	80.50	84.00	87.50	91.00	94.50	98.00	101.50	105.00	70
71	4.40	4.47	4.54	4.61	4.69	4.76	4.83	4.90	4.97	5.04	5.11	5.18	5.25	5.33	63.90	67.45	71.00	74.55	78.10	81.65	85.20	88.75	92.30	95.85	99.40	102.95	106.50	71
72	4.46	4.54	4.61	4.68	4.75	4.82	4.90	4.97	5.04	5.11	5.18	5.26	5.33	5.40	64.80	68.40	72.00	75.60	79.20	82.80	86.40	90.00	93.60	97.20	100.80	104.40	108.00	72
73	4.53	4.60	4.67	4.74	4.82	4.89	4.96	5.04	5.11	5.18	5.26	5.33	5.40	5.48	65.70	69.35	73.00	76.65	80.30	83.95	87.60	91.25	94.90	98.55	102.20	105.85	109.50	73
74	4.59	4.66	4.74	4.81	4.88	4.96	5.03	5.11	5.18	5.25	5.33	5.40	5.48	5.55	66.60	70.30	74.00	77.70	81.40	85.10	88.80	92.50	96.20	99.90	103.60	107.30	111.00	74
75	4.65	4.73	4.80	4.87	4.95	5.03	5.10	5.18	5.25	5.32	5.40	5.48	5.55	5.63	67.50	71.25	75.00	78.75	82.50	86.25	90.00	93.75	97.50	101.25	105.00	108.75	112.50	75
76	4.71	4.79	4.86	4.94	5.02	5.09	5.17	5.24	5.32	5.39	5.47	5.55	5.62	5.70	68.40	72.20	76.00	79.80	83.60	87.40	91.20	95.00	98.80	102.60	106.40	110.20	114.00	76
77	4.77	4.85	4.93	5.00	5.08	5.16	5.24	5.31	5.39	5.46	5.54	5.62	5.70	5.78	69.30	73.15	77.00	80.85	84.70	88.55	92.40	96.25	100.10	103.95	107.80	111.65	115.50	77
78	4.84	4.91	4.99	5.07	5.15	5.23	5.30	5.38	5.46	5.53	5.62	5.69	5.77	5.85	70.20	74.10	78.00	81.90	85.80	89.70	93.60	97.50	101.40	105.30	109.20	113.10	117.00	78
79	4.90	4.98	5.06	5.13	5.21	5.29	5.37	5.45	5.53	5.60	5.69	5.77	5.85	5.93	71.10	75.05	79.00	82.95	86.90	90.85	94.80	98.75	102.70	106.65	110.60	114.55	118.50	79
80	4.96	5.04	5.12	5.20	5.28	5.36	5.44	5.52	5.60	5.68	5.76	5.84	5.92	6.00	72.00	76.00	80.00	84.00	88.00	92.00	96.00	100.00	104.00	108.00	112.00	116.00	120.00	80
81	5.02	5.10	5.18	5.26	5.35	5.42	5.51	5.59	5.67	5.75	5.83	5.91	5.99	6.08	72.90	76.95	81.00	85.05	89.10	93.15	97.20	101.25	105.30	109.35	113.40	117.45	121.50	81
82	5.08	5.17	5.25	5.33	5.41	5.49	5.58	5.66	5.74	5.82	5.90	5.99	6.07	6.15	73.80	77.90	82.00	86.10	90.20	94.30	98.40	102.50	106.60	110.70	114.80	118.90	123.00	82
83	5.15	5.23	5.31	5.39	5.48	5.56	5.64	5.73	5.81	5.89	5.98	6.06	6.14	6.23	74.70	78.85	83.00	87.15	91.30	95.45	99.60	103.75	107.90	112.05	116.20	120.35	124.50	83
84	5.21	5.29	5.38	5.46	5.54	5.62	5.71	5.80	5.88	5.96	6.05	6.13	6.22	6.30	75.60	79.80	84.00	88.20	92.40	96.60	100.80	105.00	109.20	113.40	117.60	121.80	126.00	84
85	5.27	5.36	5.44	5.52	5.61	5.69	5.78	5.87	5.95	6.03	6.12	6.21	6.29	6.38	76.50	80.75	85.00	89.25	93.50	97.75	102.00	106.25	110.50	114.75	119.00	123.25	127.50	85
86	5.33	5.42	5.50	5.59	5.68	5.76	5.85	5.93	6.02	6.10	6.19	6.28	6.36	6.45	77.40	81.70	86.00	90.30	94.60	98.90	103.20	107.50	111.80	116.10	120.40	124.70	129.00	86
87	5.39	5.48	5.57	5.65	5.74	5.82	5.92	6.00	6.09	6.17	6.26	6.35	6.44	6.53	78.30	82.65	87.00	91.35	95.70	100.05	104.40	108.75	113.10	117.45	121.80	126.15	130.50	87
88	5.46	5.54	5.63	5.72	5.81	5.89	5.98	6.07	6.16	6.24	6.34	6.42	6.51	6.60	79.20	83.60	88.00	92.40	96.80	101.20	105.60	110.00	114.40	118.80	123.20	127.60	132.00	88
89	5.52	5.61	5.70	5.78	5.87	5.96	6.05	6.14	6.23	6.31	6.41	6.50	6.59	6.68	80.10	84.55	89.00	93.45	97.90	102.35	106.80	111.25	115.70	120.15	124.60	129.05	133.50	89
90	5.58	5.67	5.76	5.85	5.94	6.03	6.12	6.21	6.30	6.39	6.48	6.57	6.66	6.75	81.00	85.50	90.00	94.50	99.00	103.50	108.00	112.50	117.00	121.50	126.00	130.50	135.00	90
91	5.64	5.73	5.82	5.91	6.01	6.09	6.19	6.28	6.37	6.46	6.55	6.64	6.73	6.83	81.90	86.45	91.00	95.55	100.10	104.65	109.20	113.75	118.30	122.85	127.40	131.95	136.50	91
92	5.70	5.80	5.89	5.98	6.07	6.16	6.26	6.35	6.44	6.53	6.62	6.72	6.81	6.90	82.80	87.40	92.00	96.60	101.20	105.80	110.40	115.00	119.60	124.20	128.80	133.40	138.00	92
93	5.77	5.86	5.95	6.04	6.14	6.23	6.32	6.42	6.51	6.60	6.70	6.79	6.88	6.98	83.70	88.35	93.00	97.65	102.30	106.95	111.60	116.25	120.90	125.55	130.20	134.85	139.50	93
94	5.83	5.92	6.02	6.11	6.20	6.30	6.39	6.49	6.58	6.67	6.77	6.86	6.96	7.05	84.60	89.30	94.00	98.70	103.40	108.10	112.80	117.50	122.20	126.90	131.60	136.30	141.00	94
95	5.89	5.99	6.08	6.18	6.27	6.37	6.46	6.56	6.65	6.75	6.84	6.94	7.03	7.13	85.50	90.25	95.00	99.75	104.50	109.25	114.00	118.75	123.50	128.25	133.00	137.75	142.50	95
96	5.95	6.05	6.14	6.24	6.34	6.43	6.53	6.62	6.72	6.82	6.91	7.01	7.10	7.20	86.40	91.20	96.00	100.80	105.60	110.40	115.20	120.00	124.80	129.60	134.40	139.20	144.00	96
97	6.01	6.11	6.21	6.30	6.40	6.50	6.60	6.69	6.79	6.89	6.98	7.08	7.18	7.28	87.30	92.15	97.00	101.85	106.70	111.55	116.40	121.25	126.10	130.95	135.80	140.65	145.50	97
98	6.08	6.17	6.27	6.37	6.47	6.57	6.66	6.76	6.86	6.96	7.06	7.15	7.25	7.35	88.20	93.10	98.00	102.90	107.80	112.70	117.60	122.50	127.40	132.30	137.20	142.10	147.00	98
99	6.14	6.24	6.34	6.43	6.53	6.63	6.73	6.83	6.93	7.03	7.13	7.23	7.33	7.43	89.10	94.05	99.00	103.95	108.90	113.85	118.80	123.75	128.70	133.65	138.60	143.55	148.50	99
100	6.20	6.30	6.40	6.50	6.60	6.70	6.80	6.90	7.00	7.10	7.20	7.30	7.40	7.50	90.00	95.00	100.00	105.00	110.00	115.00	120.00	125.00	130.00	135.00	140.00	145.00	150.00	100
Unit values	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	Unit values
	Selling rate in cents														Color selling rates													

Gatchel & Manning Photo-Engravers

Environment, say some . . . Heredity, insist others, but to the serious student both factors contribute to the building of those distinctive qualities called Character. Both have played an influential part in creating the peerless workmanship which distinguishes photo-engravings by Gatchel & Manning. For more than half a century our heritage of fine craftsmanship has been conditioned and developed in the stimulating environment of Washington Square, heart of Philadelphia's publishing activities. The resultant character of our line, halftone, multicolor or color process engravings is a matter of pride to us and satisfaction to our customers.

GATCHEL & MANNING
J. J. Stinson, *President*
West Washington Square, Philadelphia 6, Pa.

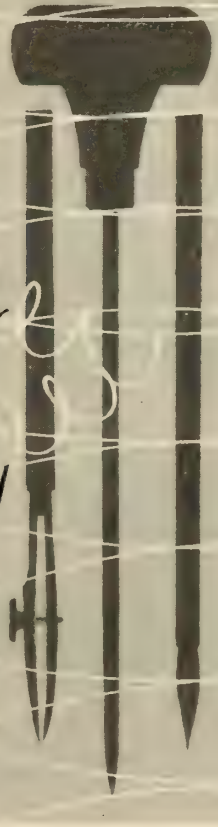


What makes *Character?*

makers of fine letterpress printing plates

photoengravers

and the color house of the finest quality



the **wright company**

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Ben Day

Screen number and maximum screen size for each of 64 positive and 40 negative designs; halftones, lines, stipples, grains, and textures available

E. S. Beck

What they are:

Transparent composition screens, stretched smoothly across wood frames, with raised design on outer side. Raised design accepts ink.

Number and kinds:

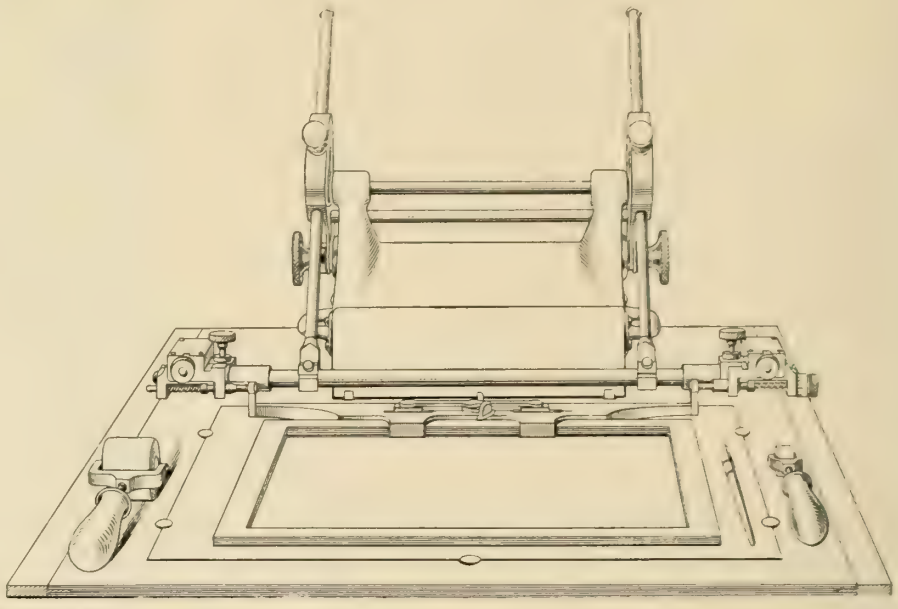
200 screens available (64 shown herewith, 40 of which are also shown in reverse). Main designs: Halftones, lines, stipples (mechanical or hand), herringbones, grains, and textures:

Where used:

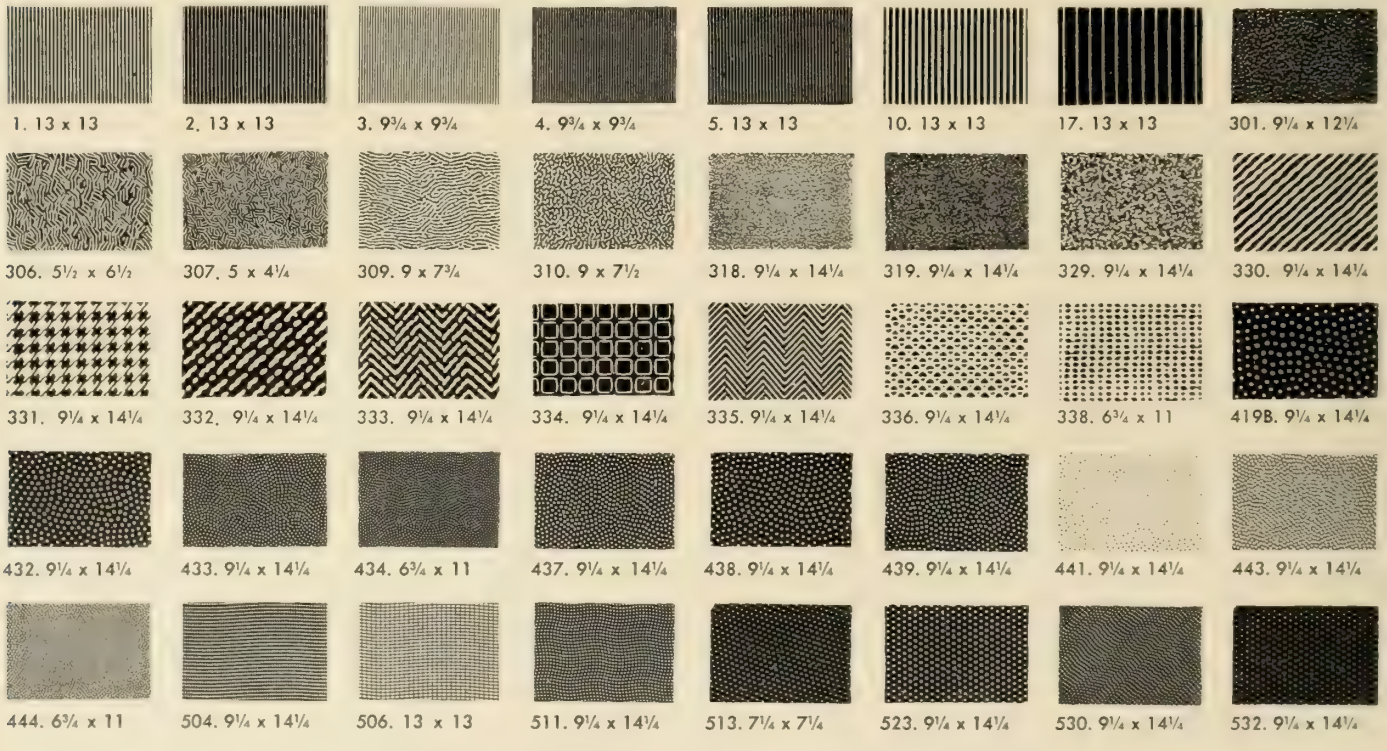
1. On original drawing.
2. Photo-engraver's plate.
3. Lithographer's stone or plate.
4. Laid on negative for reverse effect (white on black) in finished plate.

How used:

1. Raised design is inked with etching or printing ink so that it can be transferred.
2. Film is laid face down on surface to be tinted.
3. Design is printed by pressing on back with roller or burnisher.



Printing tint: The application of the Ben Day screen to a "flat" printing plate, prior to plate etching.



Tints in reverse: Showing the effects obtainable when the mediums are used on the negative instead of on the plate itself.



engraving that hits the target

A new but sound and substantial plant doing
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is steadily building this plant to lofty heights of recognition.
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FOR ART WORK ON STONE,
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THE BEN DAY RAPID SHADING MEDIUM

IT'S WHAT GOES ON BELOW THE SURFACE



You don't have to put on a diver's suit to see below the surface of a halftone. But if you'll take a glass and look closely, you'll see what makes the difference between a good plate and a poor one. Chestnut Street plates are deep-etched to carry just the right amount of ink to get the best results . . . and a Chestnut Street representative is only as far as your telephone. Call PE5-7878.

THE CHESTNUT STREET ENGRAVING COMPANY, Inc.

4. Where no tint is wanted, picture is "stopped out" (painted) with water-soluble gum.
5. Tints may be combined, laid at different angles, superimposed for combinations, or graduated as in modelling clouds, faces, foliage, etc.

Art work:

1. Make outline drawing only, as for line cut.
2. Paste tracing paper over it and outline space to be tinted, indicating screen number desired.
3. Or, put light blue wash on drawing itself where tint is wanted.
4. For graduated tint, if not to be left to film artist's discretion, indicate in wash on tracing.
5. If no natural limits are in picture, such as panel or frame (as in cloud effect), draw in guide lines in red as engraver makes print on metal plate before laying tints. (Write in: "Remove guide lines" so they will not appear in plate.)
6. Be sure screen chosen is large enough for job or else that an easily repeatable pattern is selected; or that the drawing contains a place where a break in the screen tint will be covered by some part of the picture.

Reverse effect:

White on black: Tint to be laid on negative. Use solid black in drawing for parts to be so tinted.

Color Ben Day:

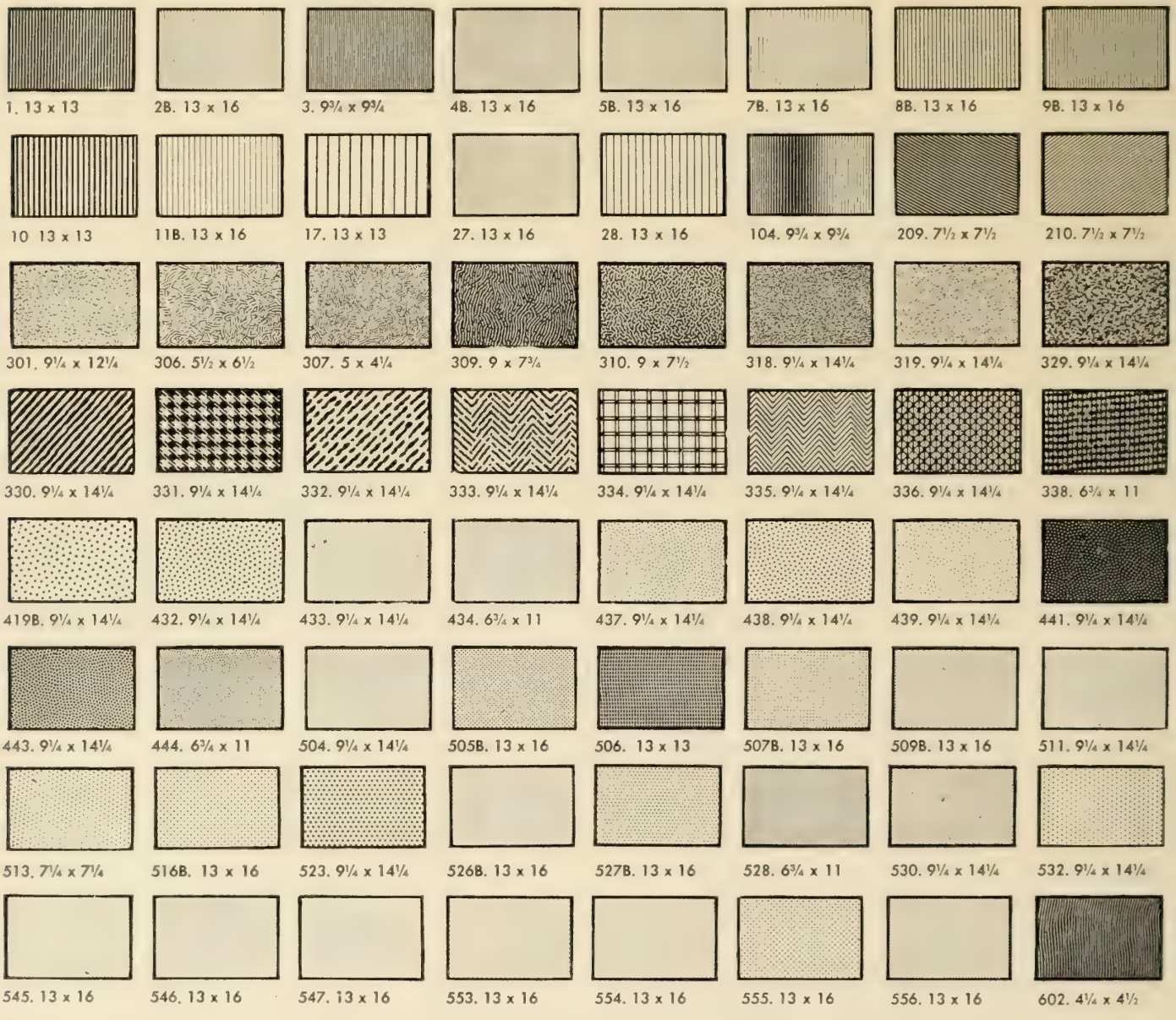
1. Make outline drawing only. Use no colors.
2. Put in guide lines for colors, keying for every color area (e.g., purple, brown, green, etc., even though these colors are made from combining just yellow, red, blue, and black in final printing).
3. Where one color blends into another, paint it on tracing paper overlay, or have engraver make regular line negative first, with all guide lines, furnishing you with velox or silver print to color.

Black-and-white photographic copy:

Full set of color plates can be made from black-and-white copy. Halftone black plate of photograph is "key" plate. Ben Day plates are made for colors. Photos usually need retouching to correct color values. Often just one Ben Day color plate greatly improves black-and-white photo.

Paper:

Use 40-65 line screens (dots to the inch) for rough papers, fine screens for super or coated grades.



Positive patterns: A selection of sixty-four of the more widely used Ben Day (positive) shading screens available.



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Step-and-repeat machines

Special equipment is used for the speedy and economical production of multiple images of a single subject; adaptable to all reproduction processes

F. Herbert Anderson

Step-and-repeat machines are photo-composing devices to produce, rapidly and accurately, multiple images of a single subject or pattern—line work, sketches, halftones, Ben Day, or combinations of these kinds of copy. Any sort of copy can be reproduced by this method, just as with conventional photo-engraving.

These multiple images may be produced as negatives or positives that later are exposed on sensitized metal plates to make the photo-engraving, or they may be exposed directly on the metal, as is done in plants that operate their own metal etching departments.

It is possible to make a multiple negative on a camera if it has a special movable back to hold and move the sensitive sheet, which is either of glass or film. On such cameras, a multiple can be made either direct from a line drawing, or from a transparency.

However, most authorities lean to the view that the step-and-repeat process is best handled away from the camera, on a machine on which such a "single unit" subject is moved over a sensitive piece of material—film, glass, or metal—and when correctly positioned is printed onto the sensitized sheet by timed light exposure. The unit is moved and printed again in other locations on the sheet as often as desired; hence the name of the process, "step-and-repeat."

For all processes

The equipment and the technique for making these multiple or grouped gang-form images, particularly over-all designs, are widely used in the lithographic process, in which the end product may be an offset plate; and in letterpress, in which the multiple is a reversed negative, as well as in gravure.

Through this process, cuts of labels, stickers, buttons, stamps, check backgrounds, bottle caps, clock and compass dials, folding boxes, blotters, book linings, etc., may be produced in black-and-white or, in exact register, in as many varied colors as may be desired.

The method of operation in, for example, a three-color label to be duplicated 12 times, is as follows:

Three individual negatives, one for each color; a layout, and three sensitized glass plates large enough for the particular job are sent to the operator of the machine. One sensitized plate is put on the plate bed, with an adapter if needed, and fastened securely. The first negative is aligned accurately in the holder by bringing the register marks to coincide with the hair lines of the registering device on which the holder has been placed.

After masking with opaque paper, the negative holder is locked in the step-and-repeat (or photo-composing) machine, moved to position for the first image on the sensitized glass plate, contact is made by vacuum (to prevent movement), and exposure is made. The vacuum then is cut off, the negative holder moved to the second position, and the process repeated, until the required dozen labels have been exposed on the plate. The same method is followed for the two other color plates, and after exposure each is developed and the conventional platemaking process is used.

Any number of negative or positive photographic images can be produced from the original copy. The maximum number is limited only by the size of the subject and of the film or glass; for example one company doing this kind of work uses a 72-inch plate.

The size of the copy is governed only by the reduction necessary in the photographic process. Copy should be black-and-white; where color is to be used, color separations must be made. In general, copy for the step-and-repeat process differs in only one important respect from that used in conventional one-step photo-engraving:

Each piece of copy for step-and-repeat must have both vertical and horizontal center marks accurately drawn upon it, based on the work size. These are the only means of registering colors and of determining the position of the subject on the metal in all classes of work.

When tones are included in the subject, the halftone is shot in the original from which the multiples are to be made, thus assuring uniformity of quality for each shot in the gang-form. Combination line and halftone work is reproduced just as easily by step-and-repeat as by conventional photo-engraving methods.

The finished letterpress product is a regular plate, on one solid piece of metal, ready to print; it can be either blocked on wood or made ready for patent base. If so desired, multiple originals can be cut apart and used as duplicates, rather than multiple plates. They can be made on 16-gauge or 11-point metal, and can be used for rotary printing by curving the plate in the standard manner.

Advantages of process

Among other advantages, the following are outstanding:

1. There is considerable reduction in labor costs because lock-up time is eliminated as the plate is one piece; because register is perfectly aligned in step-and-repeat processing; because the one-piece plate cuts down materially on make-ready; because there are no electrotypes to purchase; and because hand-stripping is eliminated.

2. Through use of multiple plates, presses are not tied up as long and consequently can be used for more working hours a day; and, stemming from this, there can be much speedier production for both printer and client.

3. Single-operation trim on bleed jobs can save up to 50 per cent of the cutting time, and through accuracy to .001 inch, in placing images and margins, there can be a saving of 25 per cent in paper costs.

4. Savings of 20 to 30 per cent often can be made over the method of purchasing an original and duplicate plates.

5. A greater use of type reverses can be obtained.

6. Unusual angles for lines of type may be wrought with a rotary negative holder.

1 Art and photography

2 Photo-engraving

Electrotypes, duplicate plates 3

Electrotypes

Push tab down, fold on this crease then fold upward on other crease over edge of page and insert in slot.

4 Paper

5 Printing processes

6 Binding, mailing, etc.

7 Typography

8 Buyers' guide, index, etc.

Thumb-dex patent 2300623
Other patents pending

Electrotypes, duplicate plates

155 Duplicate plates: Richard L. Jordan
157 Wax engraving
160 Plastic molds and plates: Samuel M. Sharkey, Jr.
164 Pre-makeready: Samuel M. Sharkey, Jr.
168 Producing ads for publication: R. T. Allen
172 Duplicate originals: Herbert Donaldson
174 Breaking for color in foundry: Walter Flower
176 Pattern plates: Henderson Foulke
178 Rubber plate printing: Thornton Williams
184 Plate correcting: Herbert Lindner
186 Making the electrotype
188 Duplicate plate estimator

Duplicate plates

Variety of standard and patented electrotypes, stereotypes, and mats meet the buyers demands for high quality, speed of manufacture, and economy

Richard L. Jordan

In letterpress work, all printing surfaces may be considered as belonging to one of two classes—original material or duplicate printing plates. Under the first classification may be grouped type, photo-engravings, hand-cut plates of metal, rubber, linoleum, etc., and wood cuts.

When reproductions or replicas of original material are made, they are classified as duplicate plates. This group includes electrotypes, stereotypes, aluminotypes, molded rubber plates, and plastic (resin) plates. Each of these varieties has its particular advantages and is best suited for certain printing applications.

The various items appearing under this heading deal with general or specific information concerning duplicate plates for letterpress printing. If electros or stereos and mats are to be made from original line or halftone plates, it should be so specified to the photo-engraver at the time that the original plates are ordered from the art work.

To obtain the best results, original plates should be clean, and sufficiently deep; type should be new. A duplicate can be no better than its master, unless special corrections are ordered.

Electrotypes

Electros can be either blocked (to make up with type), unblocked and beveled for patent base, or curved. They may be molded in wax, Tenaplate, plastic, or lead. A surface of copper or nickel may be furnished for each of these molding materials. Lead-molded copper electros are not a customary item. When an electro and an original photo-engraving are to be mounted on the same block, the electro should be ordered 16-gauge (0.065") thickness. Some publications will not accept electrotypes of halftones for reproducing advertisements, insisting on originals.

Wax-mold electro: Reproduces type forms, line cuts, halftones, process plates, or any combination thereof, although in not as fine detail as lead molds. Impression of original plate is obtained by molding in wax, which then serves as the basis for electrodeposition of the metal shell. The shell is first tinned, then backed with lead. It is satisfactory for most duplication work. Corrections can be made on type, rules joined, etc.

Lead-mold electro: A good duplicating medium for handling halftones, this affords maximum fidelity, and more exact registration in color work than wax-mold electro. Original photo-engraving must be unblocked, with bearers on and dead metal left. It eliminates possibility of loss of detail such as may occur with wax-mold electro; often is used as master plate from which other electros are made. It is not for reproducing type directly, as the type metal smashes under tremendous pressure applied to the mold in sheet lead. It can be made only from original engravings or from specially prepared electro patterns. The initial cost is higher than wax-mold electro.

Vinylite mold: A recent development. Excellent results claimed for halftone work. For further details consult the Cross-Reference Index.

Tenaplate: This molding material has a thin aluminum base covered by a molding composition, and a surface coating of graphite to insure conductivity and easy release from the form. The mold is formed by extrusion, or elongation, of the material, as in a lead-mold electro, not by displacement, as in the wax-mold electro. It reproduces type forms, line cuts, and blocked halftones of zinc or copper.

It is possible to make Tenaplate molds for storage, to be completed later or shipped to other foundries. Mixed forms can be molded satisfactorily. Halftones and line cuts can be wood-mounted. Soft-edged solids, eliminating hard edges on halftones, particularly vignettes, are provided. This minimizes makeready requirements, it is stated. Fine printing is achieved in black-and-white and four-color process. Tenaplate molded electrotype mat patterns are for mat making.

Copper electro: Copper facing for electros is used for ordinary runs (up to 150,000) on smooth paper, or for shorter runs on rougher papers. It is satisfactory for most duplication work but wears more quickly than a nickel-faced electro, and does not resist the abrasive action of certain inks as well as nickel.

Nickel electro: Nickel facing is used for relatively longer runs (up to 250,000) or on rougher papers than are practical for copper electros. There is less deterioration due to action of inks than in the copper electro; but the cost is slightly higher than copper. Chromium facing can be used for still longer runs. Detail is not affected by plating.

Solid copper duplicate originals: These are duplicate plates that claim to be superior to ordinary electrotypes where it is necessary to make additional duplicates, using the solid copper plate as the original. They hold up excellently for molding purposes and retain full detail of the original. Much used for magazine work where original engravings are specified, they are described by manufacturers as producing the same quality work as original plates, with a substantial saving in cost for duplicates.

Aluminotypes: Duplicate plates of an aluminum alloy that are cast under pressure from a plaster composition mold. The plates are light in weight and durable; their principal market is for export. A patented process. (See Cross-Reference Index.)

Vacuum lead-mold electrotypes: Manufactured by applying vacuum to the shell before the pouring operation; vacuum remains during the cooling period. Thus, it keeps the shell free from sudden contraction, and produces, it is stated, an absolutely true printing surface.

Stereotypes

The regular stereotype is made only from a mat. It is seldom used on special jobs, or for magazine advertisements where press run is large, unless nickel-faced, or unless otherwise specially prepared. This is a quick way of making duplicate printing plates at a cost less than that of any other duplicate plate. It is used successfully, with a higher grade of quality than in newspaper work, for the printing of books, wrappers, business forms, and miscellaneous work. Hard and brittle, it cannot be revised or corrected as easily as electros, and will not withstand long press runs unless nickel-faced. It does not have plane surface, hence needs much makeready in job printing.

Nickel-faced stereotype: A regular stereo, plated with nickel, this can be used to print from directly where the press run is large. Detail is not as sharp as an electro, or as a special process stereotype.

Chromium-plated stereotype: This is a regular stereo with a plating of about 0.0002″ chromium on the printing surface that gives two or more times the printing life of nickel-plated stereos. Detail is not affected by plating.

Silvertype: A patented stereotype plate that is made from the specially prepared Silvertone mat. The mat is immersed in a conditioning solution that makes it flexible, rubbery, and impressionable, with a smooth, glass-like face, free of grain marks. The molding pressure, depending upon the nature and size of the original, may vary 25 to 400 tons. The Silvertype is cheaper than some kinds of electrotypes and is produced more quickly, it is stated by the manufacturers. It may be handled as a cold process for black-and-white reproduction, in which the original form is not subjected to any heat. For color plates requiring accurate register, Silvertone mats are molded and baked on the original forms. The finished plate may be faced with nickel or chromium for long runs, but for average runs good casting metal has been found to be sufficient.

Mats

Unmounted hard zinc, copper, and brass photo-engravings in line or halftone screen or combination plates, and electros can be used as patterns for rolled or direct pressure mats. When mats are rolled, the stress on the patterns is more severe than when the direct pressure method is used. Hence, sturdier patterns are needed for rolled than direct pressure mats.

Wood engravings, and linoleum and rubber plates, cannot be used as pattern plates. Stereos are used regularly as patterns, and can also be used directly for printing. A mat is much lower in cost than the original plate, electro, or stereo. Lighter to mail and handle than plates, the mat can be made quickly, easily, and economically. There is some loss of detail. A mat cannot be printed from; it is a mold only, and must have a stereotype cast made from it for use.

Dry mat: Its basis is paper, and it is used generally in newspaper reproduction as a mold from which the stereotype is made. Depth of impression and flexibility are two of its desirable qualities. Original plates should be unmounted for making mats. Dry mats are of two kinds: direct pressure, in which the mat is molded between flat platens of a press with a vertical impression; and rolled, in which the mat is molded under a roller that passes horizontally over the mat and the form. It gives good, acceptable, and durable reproduction of relief plate.

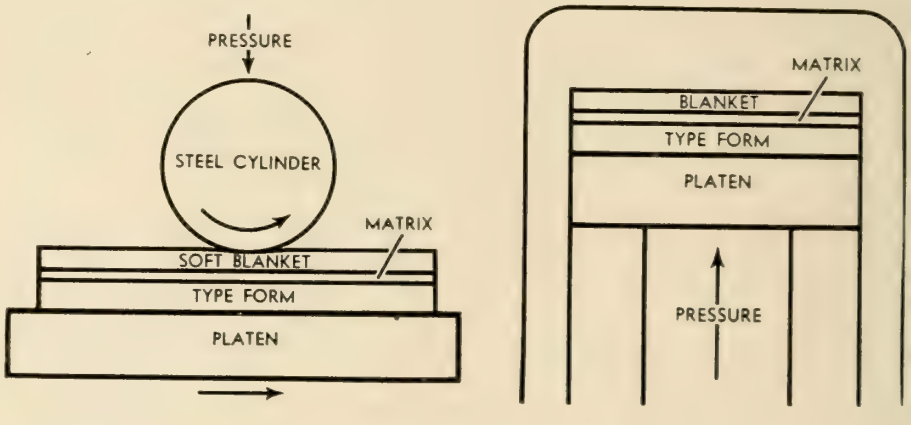
Flat stereos can be cast from mats for assembling, if desired, with type and other plates to form a complete page. Another mat of this page is then made, from which is cast a true, curved stereotype replica, ready to fit rotary press printing cylinders. The finest halftone advised for newspaper work is 65-screen. In the last few years, dry mats have improved greatly in quality, depth, and detail, yielding improved stereos.

Surface or coated mat: A better grade mat, it is coated by various manufacturers with a great variety of materials, usually some form of clay, plus a binder. The coating machine is designed to fill in the surface texture of the dry mat and so obtain greater fidelity of reproduction. There is less shrinkage than in the dry mat when direct-pressure molded, and there is greater depth, glossy solids, and mat remains flat. Slight loss of detail. Shrinks slightly when direct-pressure molded.

Wet mat: Made up of layers of tissue, various papers, and paste, this is now used less extensively than heretofore. Wet mats are of two kinds: direct pressure, in which the mat is molded and also dried under pressure between flat platens of a press with a vertical impression, and rolled, in which the mat is molded under a roller that passes horizontally over the mat and the form; mat then is dried in a steam table.

Shrinkage is less and more uniform than the dry mat. Cost is relatively low —about the same as a dry mat. It is used extensively in syndicate newspaper color work. Wet mat gives greater detail and depth than dry mat. The 85-line screen is finest halftone advisable for reproduction. It does not do the job as quickly, nor is it as free from failure, as is the dry mat. Brittle, it does not ship as well as a dry mat.

Rapid plastic magazine mats: The base is treated and coated with a patent formula that gives a deep, sharp, clean impression in both base and coating. Materials and specifications are such that its manufacturers guarantee uniformity in shrinkage and registration when used



Left: Stereo press for wet or dry rolled mats. **Right:** Direct pressure press for both wet, dry mats.

for reproducing process plates from stereotypes. The mat is designed for use when a high grade of printing is desired.

Its flexibility adapts it to work where curved stereotypes are used, as it readily forms itself to a curved casting box. Since shrinkage is held to a minimum, its sponsors guarantee as perfect registration as possible on color work. The mat is made in various thicknesses; a special mat also is available to meet requirements for a small curved stereotype when such is required.

Silvertone mat: This is a patented mat whose paper base is chemically treated so as to be flexible and pliable. On it are precipitated metallic emulsions that are said to give it such a smooth face that the original plate to be reproduced is not affected by the grain texture of the paper base. The mat is made under direct pressure and dried out. If zinc is used as the pattern plate, it should be harder than that used in ordinary line engravings, which would be smashed under the extra pressure to which the Silvertone mat is subjected. Unmounted copper original engravings are best for molding the Silvertone mat.

It is claimed that mat stands up for the making of many stereos and that its shrinkage is negligible. Silvertone mats will reproduce fine halftone screens (up to 133-line) with fidelity, the manufacturers state. Although more expensive than ordinary mats, its sponsors claim that it is cheaper than electros for newspaper advertising, and also effects savings in postage and mailing costs.

Wood ad mat: Used extensively in commercial plants for cold rolling advertisements and dealer help advertising, this mat produces line or halftone cuts with fidelity. The ad mat not only can be molded with ease but also assures accurate flat casts whether made in daily or weekly newspaper offices.

Wood graphic mat: Intended for more exacting requirements, this is employed in direct pressure molding and drying on the form in one operation or, if the plant is so equipped, it can be transferred to the steam table for drying. The smooth, even surface of this mat assures solid blacks and the soft texture is claimed to guarantee faithful reproduction of all tonal gradations.

Wood hill plastex mat: Used solely for baking on the form, this mat is utilized in the quality advertising field and also extensively for multicolor work. Detail register is said to be certain and the overall reproduction is claimed to be excellent for newspaper printing.

Plastic plates: (See Cross-Reference Index and pages 160 to 161.)

Rubber plates: These can be made from type, photo-engravings, electrotypes, stereotypes, or any combination of these when properly prepared, but not from wood or linoleum blocks. They are made by molding a matrix from the form, then molding (vulcanizing) a rubber printing plate from the matrix.

Wax engraving

A wax engraving is actually a wax engraved electrotype. It is prepared in the same manner as electrotypes with the exception of the preparation of the mold. In electrotyping the subject to be duplicated is molded directly into the wax case, while in wax engraving all or part of the mold is prepared by cutting or stamping in the wax.

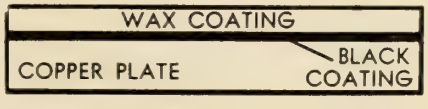
A complete case (mold) may be prepared and cut by hand from a layout, molded from a type form or a plate or by a combination of these methods. From a rough sketch the wax engraver can hand rule all the line-work into the wax-coated plate. The hand-rule line work is dusted with white powder in order to guide clearly the machine-engraver.

It is thus possible to incorporate rules, borders, geometric designs, etc., into a printing plate and to be sure that all borders and rules cross and join perfectly. A modern engraving machine can be employed. This machine has an accuracy of one-thousandth (.001") of an inch.

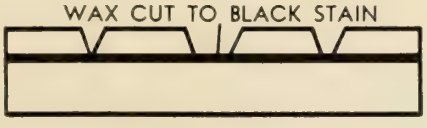
For maps or diagrams containing very much detail, the wax surface is sensitized photographically so that it may receive a print from a photographic negative. The wax is then hand-or machine-cut, the surface print serving as a guide or pattern for cutting.

Corrections can be made easily in this process. Wax in the case is melted where necessary, obliterating the error, the wax is smoothed out, and the correct detail is then cut into the new surface.

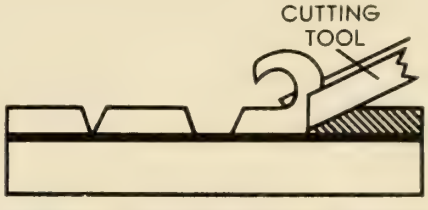
When used judiciously, wax engravings may often make the employment of combination plates unnecessary. The finished wax plate serves as a mold on which copper is deposited electrolytically, as in conventional electrotyping. Actually, the finished plate is an electrotype, blocked, unblocked, or curved.



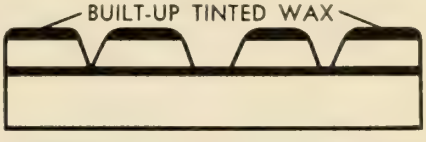
1. Staining the copper: Top of the copper is stained black, and then a layer of gray wax is evenly flowed over the stained copper surface.



2. Cutting: Design is hand-engraved, machine-ruled, or photographed onto wax. Type may be machine stamped into wax. When photographed, developed image is tooling guide.



3. Depth of cut: Engraver tools design to the copper surface revealed by black stain.



4. Building up: Blank areas are built up with more wax, as in preparation of electrotype mold. Built-up areas are tinted for easy identification. Wax plate is graphited, as electrotype mold. Usual electrotyping process is followed.

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REILLYTYPES

Used in place of duplicate engravings, REILLYTYPES are specified on more than 50% of all national magazine campaigns because they save up to 60% on black-and-white or color duplicate engraving costs.

REILLY PLASTICTYPES

Reilly PLASTICTYPES are lightweight plastic plates specifically designed for use in place of electrotypes, in newspaper advertising campaigns. Comparisons of actual tear sheets prove that Reilly PLASTICTYPES produce keener, cleaner, more detailed newspaper printing. Besides their reproductive superiority, feather-light Reilly PLASTICTYPES cut shipping costs an average of 60% . . . making air mail and first class shipments entirely practical. Reilly PLASTICTYPES are being used by every daily newspaper in the country and are enthusiastically endorsed by newspaper mechanical superintendents everywhere.

REILLY VINYLITE MOLDS

Reilly Vinylite Molding Process produces the world's finest electrotypes. On your next electrotype order, specify this all-purpose perfected plastic molding process which forms deeper, cleaner electrotype molds that are far superior to lead or other molding mediums.

"Electrotype Extras"

Plastic molds and plates

Molds are used in the manufacture of both electrotypes and plastic plates; plates are printed from directly or used to make stereos

Samuel M. Sharkey, Jr.

Duplicate plastic printing plate progress has been along two lines—plastic plates, and plastic molds for the production of electrotypes. The plastic molding technique is a revolutionary development in the production of electrotypes through which greater fidelity of type and halftone screen reproduction is achieved. On the other hand, plastic duplicate plates have been received enthusiastically among users of newspaper printing and advertising, but as yet have found only limited use in fine color work.

Two types of plastic material are in use: thermoplastics, including vinyl resins such as Vinylite, and thermosetting materials, including phenolic resins such as Bakelite.

The basic difference between the two kinds of plastics is that the thermosetting plastics set or polymerize under a combination of heat and pressure so that when subjected to reheating they will not soften or change in any way. Thermoplastic materials, once set, can be remelted.

This "solubility" of thermoplastics is the result of setting in a chilled press. It may be likened to water, which when chilled becomes ice, yet can be melted, re-used as water and re-frozen as ice.

Production of both plastic plates and molds varies both in speed, method, materials used, and cost from shop to shop so that no single description of their mode of manufacture could be precise in every detail for every shop. For the purpose of a general description of the process, however, the editors of PRODUCTION YEARBOOK have selected the system used by one of the largest national manufacturers of electrotypes, stereos, mats, and plastic plates and molds. Since plastic plates and molds are two distinct products each will be discussed separately in the article.

Thermoplastic molds

In making plastic molds, either thermosetting or thermoplastic materials can be used. Thermoplastic plastic molds are made as follows:

1. Form is thoroughly cleaned. The elimination of dirt, oil, or ink is vital to the carrying through of later steps.
2. Form is preheated, with a sheet of Vinylite thermoplastic in place over it.
3. Pressure is applied in a cold press, with the Vinylite in place.
4. With pressure continuing, Vinylite is allowed to cool in press to prevent shrinkage.
5. Form is removed from the press.
6. Vinylite is released from form manually and quickly with a flick of the wrist.

The thermoplastic mold is made directly from the form or original engraving. It is principally used as a mold for the manufacture of electrotypes. Electrotypes made from plastic molds reproduce the finest detail and boast great fidelity in reproduction, insuring excellent printing results.

Thermosetting molds

Thermosetting (phenolic) molds are used primarily for the making of plastic plates. The mold is not made directly from the form or original, as with thermoplastic molds, but is made from a metal pattern plate.

A prepared sheet of thermosetting phenolic resin is placed over the male pattern and the whole put into a hot press. Heat and pressure combine to make an impression to the floor of the pattern. After removal from the press, the female thermosetting plastic matrix is released quickly and manually from the pattern. This now is known as a thermosetting plastic female matrix. It takes about 20 minutes to make such a matrix.

Plastic plates are made from these molds. The mold or female matrix is placed in a frame and a predetermined quantity of granulated Vinylite, a thermoplastic vinyl powder, is poured onto the matrix and levelled. The thermosetting plastic female matrix, bearing this powder, is then placed in a hot press. Under heat and pressure the thermoplastic powder melts down into a gummy mass and fills the matrix. It is then chilled to harden and becomes a male plate.

The male thermoplastic plate is then stripped manually from the female thermosetting matrix and after testing is ready for use. It takes about five minutes to make each plate from the matrix.

As many duplicate printing plates as are desired may be made from the same thermosetting plastic matrix. At present, plastic plates are generally made from thermosetting molds, as described above. If an electro is desired, it can be made from a wax, lead, or Tenaplate mold or from a thermoplastic mold.

When a thermoplastic mold is used for the manufacture of an electrotype, the general procedure of manufacture is altered somewhat. Thermoplastic molds can be made from anything a wax or lead mold is made from. Since the thermoplastic mold requires relatively little pressure it can be made directly from the form without injury to the type or other material in the form.

While plant experience in the matter of preparing the plastic mold for electrodeposition varies, many large users now completely eliminate graphiting. The much cleaner method of spraying the mold with silver is employed. The same mold can be used for the manufacture of many electrotypes. It is claimed that the electrotype shells made from the plastic mold are more precise than those made by former methods because they are not subject to the variations resulting from the 28 steps necessary in the manufacture of wax, lead, or other molds that can be used only once.

Plastic mold electrotype

Actual steps in the manufacture of an electrotype from a thermoplastic mold are as follows:

1. Copper connection is affixed at the top of the thermoplastic mold.
2. Mold is thoroughly cleaned in a strong solvent.
3. The mold next is sensitized to facilitate the adherence of the silver spray.




SERVICE



... VINYLITE



Illustrated here is one of two specially designed vinylite presses now in operation at Partridge & Anderson. This new, yet proved moulding process, now recognized as the finest to be developed, has these outstanding advantages:

- **Accuracy of reproduction.**
- **Duplication of plates from the same mould.**
- **Elimination of distortion.**
- **Release of standing forms.**
- **Permanent storage of moulds.**

....and MATS

Here also you may obtain the highly coated premium Precision mat designed for difficult halftones, as well as the lesser priced Standard mat used for line subjects and simple screens. Service to our customers has been further expanded by the installation of equipment to produce Plastic newspaper plates. Proven equipment is not the whole story here at P & A, because we also have the men who know how to use it.





- **TENAPLATE moulding—a worthy supplement to vinylite or lead.**
- **The coated Precision mat for fine halftones.**
- **The Standard mat for type and line subjects.**
- **Plastic newspaper plates.**

PARTRIDGE & ANDERSON COMPANY

712 FEDERAL STREET, CHICAGO 5, ILLINOIS

TELEPHONE HARRISON 3732

ELECTROTYPERS • NICKELTYPERS • MATRICE MAKERS • STEREOTYPERS

4. Silver spray is applied to thickness of about .0000002 inches.

5. Mold is then placed on a glass case and suspended in the deposit in the conventional manner.

6. After mold has had a sufficient deposit, it is removed from the case.

7. Shell is stripped from the mold. It is released easily, without strain or distortion.

8. After repeating Steps 2, 3, and 4, mold can be put on glass case and into the bath for the electrodeposition of another shell.

9. First shell is finished in the usual manner, with one exception. In the tinning, the face of the electrotype shell must be protected from the backing-up metal with a plaster of Paris composition because the silver on the face acts as a soldering agent and creates a great affinity for the backing-up metal, which thus might adhere to the face.

Increased use

Electrotypers in all parts of the country now have or are installing equipment for the manufacture of plastic molds and plastic plates. Many large users of electrotypes and mats are now using plastic mold electrotypes and plastic plates. No longer a dream or a future development, plastic plates and molds are now a commercial reality.

Although as yet not widely enough nor long enough in use to permit standardization of manufacturing procedure or of price, plastic plates and molds have already taken a firm foothold in the graphic arts. There are several reasons for this:

1. Adaptability: Plastic printing plates may be nailed, blocked, bevelled for use on patent base, sawed, mortised, notched, shaved, routed, made to 16-gauge thickness, etc.

2. Quality: Plastic plates and molds have excellent production qualities. It is claimed that electrotypes produced from plastic molds are more faithful copies of the original form than could have been obtained from wax, or even from lead. Both plastic molds and plastic plates yield the finest quality of reproduction.

3. Uniformity: All duplicate plastic plates, made from one female matrix, are exact duplicates of each other and of the original, as contrasted with electrotypes made from wax molds which require a new mold for each electro and wherein each mold involves 28 steps of manufacture before completion.

4. Speed of manufacture: There is considerable saving in the time required to produce plastic plates in large quantities, as compared with that in turning out the same number of regular newspaper electrotypes.

5. Speed of handling: Newspapers, for one, can save time, as against a mat, for upon receipt of the plastic plate they may incorporate the plate directly into the full page lock-up eliminating the need for making a flat stereo cast from the mat. This also results in reducing the amount of shrinkage, potential distortion, loss of detail, and loss of depth that would result from the extra mechanical step of casting from the mat.

6. Shipping economy: Weight of plastic is about one-seventh as much as the conventional electrotype, meaning a great saving in shipping costs. It is possible to ship a plastic plate by Air Express or airmail first class at a cost lower than that incurred by shipping a regular electrotype by Railway Express or parcel post. Plastic plates are excellent for export use, national newspaper campaigns, etc.

7. Handling durability: Plastic plates are virtually indestructible. They do not deteriorate in storage.

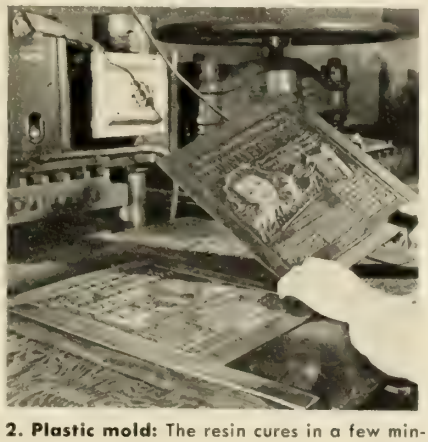
8. Printability: Plastic plates, when printed from directly, carry an intact ink film to the paper, conserve paper, result in finer printing. They also require less ink than metal plates. For color work, they register with precision.

9. Cost: Actual production cost of plastic plates at present manufacturing techniques is less than that for conventional electrotypes. Economies in shipping and in production time bring the net cost of the plate as delivered to the publisher still lower.

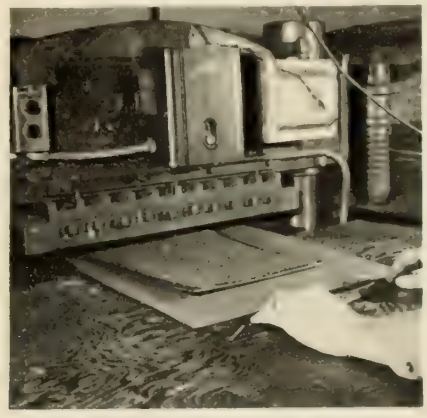
Among the problems concerned with the use of plastic plates and molds is that of patching. Some shops prefer to make a new plate (since it is quickly and economically done); other plants report little difficulty, using plastic cement.



1. Matrix blank: Sheet of thermosetting phenolic plastic is placed over master pattern on bed of hydraulic press. Depth of mold is controlled. Heat and pressure are then applied.



2. Plastic mold: The resin cures in a few minutes. Then the molding press is opened, and the hardened matrix, which is an exact female mold of the master pattern, is taken from it.



3. Plate molding: Plastic molding compound is sprinkled onto the female matrix and levelled. Controlled heat, pressure, and subsequent chilling transform powder into a plate.



4. Plastic plate: A hard, flexible, lightweight plastic plate that is a perfect facsimile of the engraving or type form strips off the matrix, ready for use except for trimming.

RICHNESS
of effect

Fortunately, the American public has become expert in sensing what constitutes a fine picture. For 25 years our public, the *same public* to whom all our commercial literature is addressed, has been going to a school of *picture appreciation.* In other words, *"the movies".* There it has been shown pictures of the highest possible clarity. No detail has been neglected. Closeups of interiors which reveal a richness and elegance never before glimpsed by the common public have served to go far beyond the fondest dreams, even of the most imaginative minds. Yes, indeed, the movies have made it their business to keep ahead of their public. And in the light of common sense, that is what the printers of America should do—*Keep ahead,*—NOT fall behind.

Letterpress, or direct printing, produces a deep rich black. Synthetic imitations produce a faded, half-inked impression. And some so-called *"modern minds"* actually believe that the American public is incapable of sensing the difference. That there IS a difference and a monumental one, is clearly understood by the very public which is commonly thought not to see any. Royal makes no such mistake. We *know* from long experience that the electrotyped FORM is the one best method of bringing a relief surface into contact with a paper surface. It leaves nothing to doubt. And naturally, if that form happens to be an electrotype by Royal, we also know that the result will be a maximum richness of effect.

ROYAL

Royal Quality
SINE DUBIO

ROYAL ELECTROTYPE COMPANY, *Philadelphia, Boston*



Pre-makeready

Based on the theory that not all areas of a plate should be of same height, new techniques recess highlight dots and bump up the solid areas

Samuel M. Sharkey, Jr.

Makeready is a manual process of increasing or diminishing the height of certain areas of a plate or form, or of increasing or diminishing the cylinder pressure of certain areas, so that they will receive a heavier or lighter impression on the press, thus providing clearer definition and improving the quality of reproduction.

Pre-makeready is a method of accomplishing the same general result in the manufacturing of the photo-engraving, electrotype or mat before it is sent to the pressroom. While there are several techniques and patented methods of pre-makeready, their essential purpose is the same although their methods vary.

Varying printing heights

Pre-makeready is founded on the theory that not all areas of the plate should have the same printing height. Solid areas should be the highest, middletone areas less high (about .002 inch less) and highlight and vignette areas still lower.

The purpose is twofold.

Firstly, this will cause the heavier areas to print more heavily than the lighter areas and reduce actual press makeready to a minimum, saving considerable press time. In the case of magazine and newspaper printing, where there is relatively little or no makeready on the press, much better printing results are claimed for the pre-madeready plates.

Longer plate life

Secondly, the brunt of the impression is borne by the solid areas, which are more capable of withstanding the wear and tear, and therefore the plate life will be longer. Pre-madeready originals serve as a mold for electros that retain the pre-makeready of the original, since the electros are essentially mechanical duplicates of the original.

Basically, pre-makeready is a method of applying pressure to the plate so that the heavy, middletone, and highlight areas will be on different printing levels. The method of preparing the plate prior to application of the pressure is the chief point of difference in the various techniques.

By careful press makeready, a printer can preserve a soft vignette, a thin line or serif, a delicate line drawing, or any other fine detail in any plate. But that same plate, sent to a score or more different printers, might receive as many varying treatments since, for example, an average magazine cannot devote the same time and attention to the plate—or form—that the printer on a commercial run of a fine broadside will do.

Press makeready consists of applying overlay, interlay, or underlay—varying thicknesses of paper packing or chalk-worked paper—either pasted on the impression roller of the press, under the type, engraving, or electrotype on a flat-bed press, or under the reproductions of these same portions in the stereotype cast of a rotary press.

Press makeready

Conventional makeready as it is applied on the press is a tedious, time-consuming task that necessitates considerable non-productive press idleness. Pre-makeready eliminates the greater part of such work and time by preparing the plate or form in advance to overcome these difficulties.

Pre-makeready covers all preliminary operations necessary in preparing the plate or form for printing, such as compensating for high or low slugs in forms, improperly mounted halftones or line engravings, failure to fill open spaces with dead metal to insure uniform molding, low areas in plates, "bumping" of engravings, etc. It can be applied to electrotypes, stereotype casts, mats, plastic plates, halftone or line engravings, etc.

A better original for molding is produced with pre-makeready because increased molding pressure can be applied without danger of fracture in delicate highlight areas. Under this increased pressure, the full depth of the original is retained in the middletone and shadow areas, thus preserving tone separation with greater fidelity. The highlight areas, being recessed, are then not exposed to smashing under the electrotype finishing process.

With regard to the press plate, over-inking of deep shadows and solids is avoided because of the recession of highlights. Ink is not wiped or squeezed off form rollers onto the side of the highlight dot to print as a ring around the dot, meanwhile accumulating so that eventually it fills the screen.

More color can be carried without overprinting highlights and, coincidentally, less color actually is needed because shadows and deep middletones will receive all the "sock" needed while recessed highlights and light middle tones are relieved against excessive impression.

Plate wear is reduced to a minimum. Consistent quality is maintained throughout the press run, since highlights are printed cleanly, without muddiness; the most delicate tone separation is retained, and illustrations appear consistently brilliant. There also is a minimum of press stoppages for wash-up.

There are a number of methods of carrying out the pre-makeready process.

Bac-etch

In this patented photo-mechanical process, the face of the plate is prepared and etched in the normal manner. The same image, reversed, then is reproduced on the back of the same plate in precise register with the top surface, in the Bac-Etch light ray diffusion method through which all highlights and disconnected middle-tones are dropped out, and all shadows and connected middle-tones solidified.

The original face of the plate then is protected and the back is etched. The Bac-Etch original next is pre-bumped, recessing the highlight and middle-tones to the depth etched out of the back.

This method broadens the previously used manual double bump process.

which was usable only for newspapers, or the manual McKee process, to all lines of plate users. Its cost is said to be 10 to 25 per cent of the cost of the original.

McKee process

This is a method for varying the printing pressure on the different areas of an electrotype in typographic printing by bumping up the dark areas and lowering the light areas in the plate.

Stereotype mat

Stereotype mat halftone pre-makeready differs from pressroom makeready only in that the pre-makeready is put into the mat, to cause the solids and highlights to be at different printing levels in the finished stereotype printing plate.

Automatic pre-makeready

In this method, the original engraving is routed up to the printing edge, the back of each side filed to a feather edge and the edges then bent back to meet the base. This process is of particular use in retaining the soft edge in vignettes, and even a stereotype made from a mat of the electrotype will retain it.

Letouzey neoprint

The Letouzey process is a method of printing letterpress without makeready, interlay, or overlay. It is based on a mathematical principle that different type characters, because of their varying surface areas or "printing density," require different printing pressures, which are fully measurable in advance of the press run.

The varying pressures are obtained under this system by predetermined divergence from the standard type height (0.918 inches) of each character instead of the conventional makeready method of varying the pressure on the impression cylinder. An impression cylinder packing of definite hardness and resiliency is used, with variances for the particular kind of job and the paper involved. This packing, combined with the variations in type heights, determines the printing pressure.

At present, the Letouzey method can be applied to all letterpress printing, although where line and halftone cuts are used in a form, the only pre-makeready is an interlay of an adapted thickness according to the printing density of the halftone, about .002 generally.

Under this system, the printing density of each character is determined on a square basis; that is, a black square would have a printing density of 100 per cent, and a period of 1 per cent, since the latter occupied only 1 per cent of the square's total area.

This density is found by drawing an enlarged plan of each character and applying a photo-electric instrument that determines the density quickly by direct measurement. Letters such as m and w are set higher in the form than thin letters of small density such as i, l, or the smallest punctuation marks.

The total variation from the normal is 0.920 to 0.914 inches, but slight as this seems to be, it is said that it evens the pressure distribution so that the smaller characters, while getting their full proportion of ink, do not receive excessive pressure as compared to the larger characters, or as compared to what they would receive were all characters on the same plane. Ink squash and embossing are greatly reduced.

Bishop process

The primary purpose of plate treating is to produce a printing plate wherein the different tonal values are brought to levels that require the least amount of press makeready and to minimize plate wear. In non-technical language, the Bishop Process keeps type and middletones at the travel line of the press, with solids .002ths above and highlights and vignettes .002ths below.



Cutting the paper: Technician cutting and peeling off the layers of paper to raise the solids and lower the highlights when pressure is applied. See diagram in the next column.

By using a new type of matrix of layers of parchment, manila and coated papers laminated together by a patented wax formula, the Bishop Process now affords an accurate makeready cutout. Male and female matrices are cut out by a trained technician from proofs of the plate on Bishop Matrix paper. These matrices are then placed on the front and back of the electrotype to be treated.



Pre-madeready plate: This plate was premadeready by the Bishop process. The pressman was so instructed. A minimum of press makeready was used. Arrows indicate the recessed and the raised areas of the plate.



Bishop principle: Solid areas are raised .002", highlight areas recessed .002", middletone areas are kept at the travel line of the press.

Upon being fed into the Bishop Rotary Treating Unit, the cold plate passes between solid pressure steel rollers which cause the printing surface of the plate to be raised in the solids and lowered in the highlights in accordance with the treatment cut into the Matrices.

It is claimed that Bishop "Pre-Makeready" Electrotypes save approximately ⅓ of all press makeready time. The scientifically "built-in makeready" gives better quality printing and decreases plate wear.

When running more than one up, every plate of the same subject will have the identical pre-makeready bumped into it. The Bishop "Pre-Makeready" Process lends itself to all classes of letterpress printing but it is particularly advantageous to those printers who print four or more up of the same subject. This has a definite bearing on the cost, as each additional duplicate plate treated helps to spread the initial cost of cutting the matrices thereby lowering the unit cost of the plates.

Schedules


SPEED
SOUTH AND WEST
PENNSYLVANIA RAILROAD
TIME TABLES
WHAT'S WH
New York Central
SYSTEM TIME TABLES
AIR EXPRESS RATE SCHEDULES
FROM NEW YORK, NEW YORK
MORE PLANES AVAILABLE
pack Lightly
pack Compactly
pack in Small Units
ship when ready
NOW NEW LOW RATES 22 LESS THAN IN 1943
AIR EXPRESS
CARGO CAPAC
WATER LE

versus

TIME*tables!*

SERVICE can, and should, add up to more than delivering on time when your order is marked *Rush!* Here at Flower we offer all kinds of extra services along with making perfect reproductions of your forms and plates. Some of our accounts simply send us their schedules and let us check the timetables. Why not avail yourself of this service that gets your electros directly to the newspaper, or magazine — on time — by the most economical means. We have the TIMEtables and the inclination to serve you. Send us your schedules.

UPTOWN PLANT
461 Eighth Avenue (at 34th Street)
Telephone: MEdallion 3-3126-7-8

DOWNTOWN PLANT
216 William Street (at B'klyn Bridge)
Telephone: BEekman 3-1330-1-2

FLOWER

Electrotypes

Producing ads for publications

Material sent to printer or publication takes wide variety of forms from complete plates to typewritten copy with rough layout and instructions

R. T. Allen

Material sent to a printer or publication may take a wide variety of forms, from a complete plate ready to be printed from to typewritten copy, rough layout, and instructions to "publication set."

Several considerations affect the choice of what sort of copy to send. The production man should know first what the publication will or will not accept. Other factors include time, cost, quality of reproduction desired, and the nature and number of other publications on the schedule.

Following are the more common kinds of material that may be supplied, with comments and cautions as to the use of each. It is up to the production man to resolve the various considerations of time, cost, quality, etc., in selecting the kind of material best suited to each specific job that is to be carried out.

Publication-set ads

The publication is often sent the typewritten copy, a layout, any necessary art work, and instructions. Production economies result, although some publications may charge for such handling. Weekly newspapers not having their own engraving departments may charge for outside plate-making.

Considerable savings in composition and make-up are usually effected, but the ad is limited to the selection of the publications' type faces. Proofs in quantity and of good quality usually must be ordered at additional expense. A publication closing date can often be met more quickly by letting the publication set up the ad.

Where time is a critical consideration but it is desired to retain control over the typography and appearance, the ad may be made up locally and reproduction proofs then sent to the publications with instructions to make necessary cuts. This procedure is most adaptable to an all-type ad or one with line illustrations or coarse 55-screen halftones. If finer screened illustrations are used, the type proof and the original or duplicate art can be sent. Good quality, dry, flat, proofs must be used to get best results.

When the same advertisement is to run in several publications, it is often possible to use the same plate for more than one. Newspapers will exchange or pick up mats from one another. While this may result in loss of detail and additional shrinkage of the ad, economies and saving of time are effected. The quickest and often the only solution for replacing lost or damaged newspaper mats may be to have the paper obtain a mat from the newspaper on the schedule that is nearest to them.

When two or more magazines on a schedule are in the same publishing house, it may be necessary to send only one plate to the group. However, since large publishers often have several printing plants in different parts of the country, this procedure should be checked with each company concerned.

It may also be possible to use the same plate for a June issue of one magazine and an August issue of another. In so doing, careful checks should be made on screen, size, etc., and whether all concerned will take the same kind of plate. If the first publication has a long run and prints directly from the plate, it may be too worn for good reproduction in the other publications on the list.

Safety molds

When shipping color plates from one publication to another, the releasing publications should make and hold a "safety" mold of the set of released plates. This usually costs from $20 to $40 for a four-color set, and when considered in relation to the cost of the whole ad it is a small precaution to take. Should the press plates be damaged in any way, duplicates can be made with these molds without having to recall the originals.

A photo-engraving of entire ad, or a 16-gauge electro and the original halftones, may be sent to a publication. This is usually done when only one publication is on the schedule, or when a publication requests the originals. This procedure will give better printing results in the halftone areas, although the 16-gauge electro will cost more than the conventional blocked electro.

When more than one publication on a schedule requires the originals at the same time, duplicate photo-engravings can be made or, at less cost, "duplicate originals" can be ordered. (See Cross-Reference Index on Duplicate Originals.) Most publications will accept them in place of originals.

Electrotypes are used when quality reproduction is desired in more than one publication at a time or when the original plates or form cannot be released. The various kinds of electrotypes and purposes for which each is best suited are described in the Duplicate Plate Chart (see the Cross-Reference Index).

16-gauge electros

The nature of the subject, the quality of reproduction desired, and the length of run determine the kind of mold and the surface of the plate. However, the printing equipment and methods of the publisher determine whether a blocked or unblocked, 16-gauge, 11-point bevelled, or curved electro is required. Publication requirements should be checked on this.

In using 16-gauge electros, the expense of patching in the originals may be avoided by electrotyping the whole form and scratching out the halftone section, sending the original along as a separate piece. The publication usually handles this without charge to the advertiser and uses the halftone area in the original as a guide for precise patching.

If a multicolor job is separated for color in the foundry, it is wise to send at least one complete electro, to serve as a guide for precise positioning of the various color elements. Where several publications require originals, but where the budget is limited, lead mold electros with bearers and dead metal left in can be used, if the publications are willing.

To obtain the best quality reproduction possible, certain mechanical re-

The Rapid Way

Published in the interests of
BETTER REPRODUCTION IN PRINT
by
The Rapid Electrotype Company
Cincinnati, Ohio

Branch Plants: NEW YORK: Atlantic Electrotype and Stereotype Co.
PHILADELPHIA: Rapid Electrotype Company
DETROIT: Northern Electrotype Company
SAN FRANCISCO: Rapid Electrotype Company

Branch Offices: ATLANTA • CHICAGO

Invitation to ADVERTISING EXECUTIVES

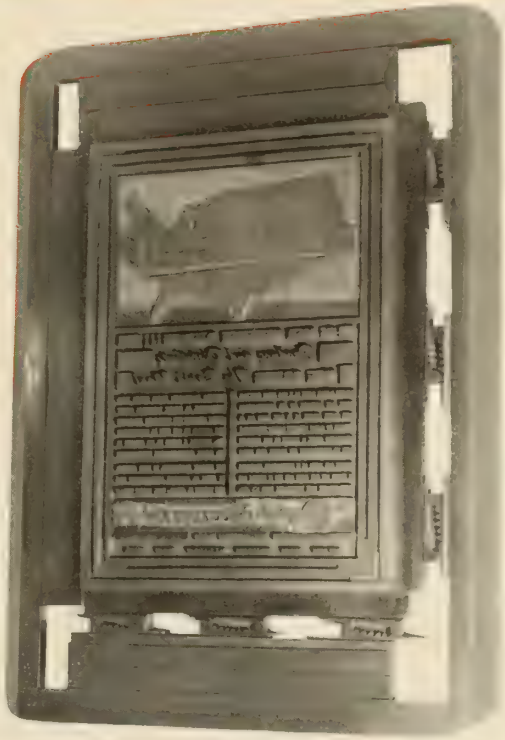
This four-page insert is typical of a regular issue of *The Rapid Way*, which is the informative house magazine of The Rapid Electrotype Co. If you are interested in the better reproduction of national newspaper advertisements and do not receive *The Rapid Way*, we'll gladly add your name to the mailing list upon request.

DEMONSTRATION:

ELECTROS and MATS FOR NATIONAL NEWSPAPER RELEASES

Whether you release
AD-ELECTROS or MATS,
Duplication starts with
THE ORIGINAL FORM

All the thought given to the preparation of a national newspaper advertisement is reflected in the original form, which consists of photo-engravings or type, or combinations of both. For instance, it is well to note that good newspaper halftones start with the artist or photographer, who, in considering the ultimate use of the illustration, will strive for a composition in which at least 60 per cent of the total area is devoted to light and middle tone values. This will permit the photo-engraver to get the greatest average etching depth in all tones. The choice of type, too, will show consideration for the specific requirements of reproduction for newspaper printing.



The importance of deep etching in halftones is clearly demonstrated on the following pages. At each step from this original form to the final curved printing plate, losses in depth will take place. For crisp definition and clear printing, start with good originals.

YOU FURNISH NEWSPAPERS EITHER AD-ELECTROS or MATS

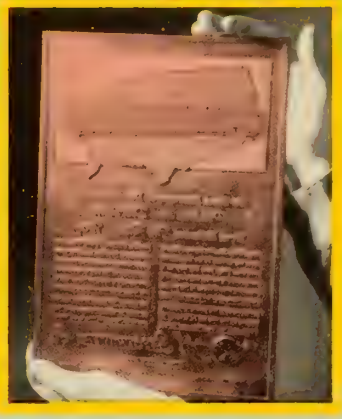
SEE NEXT PAGE ➡

Expect great things from Rapid...

The 3 Steps Involved when an AD-ELECTRO

For National Newspaper Advertising you furnish an **ELECTRO** *which goes through these steps OR you furnish a* **MAT** *which involves two additional steps*

AD-ELECTRO
AS SHIPPED TO NEWSPAPERS



1. ELECTROTYPE
This is an unmounted, news-high electrotype, ready to be shipped directly to a newspaper. It represents the most faithful duplication of original material with minimum loss.

When you furnish an electrotype, it is important to note that the plate goes directly into the newspaper page form . . . there are no intermediate steps to cause further loss of depth or detail.



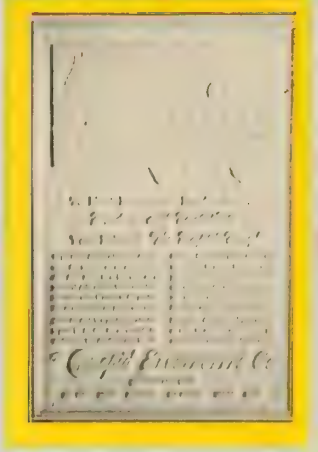
1-A. NEWSPAPER PAGE FORM
The newspaper places your electro directly in the newspaper page form.

The 5 Steps Involved when a MA

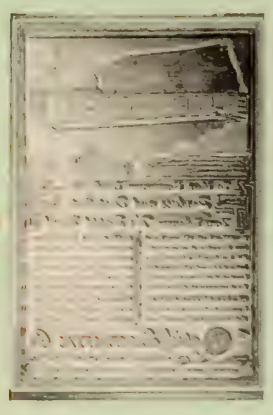
MAT
AS SHIPPED TO NEWSPAPERS



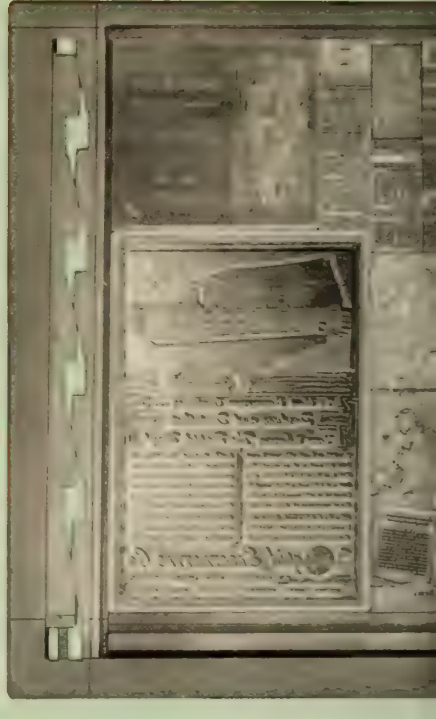
1. MAT PATTERN
When mats are ordered, the electrotyper makes a mat pattern plate, which is backed up with hard metal to withstand great pressure in mat making.



2. MAT
This is the mat which is sent to a newspaper. Here the advertiser can check undue loss of detail and depth by specifying *direct pressure* mats.

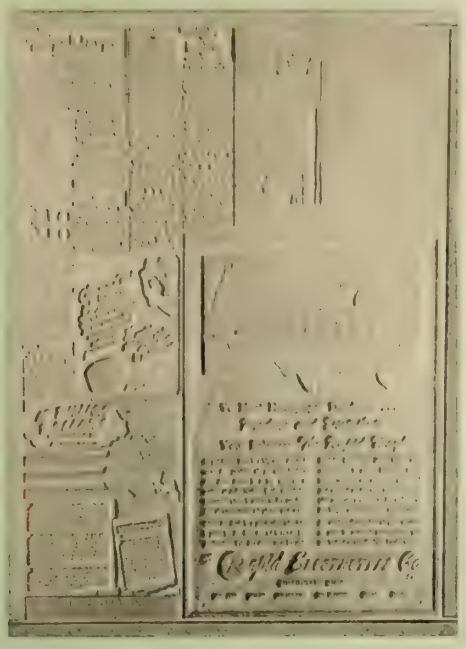


3. FLAT CAST
The flat stereotype, cast by the newspaper from the advertiser's mat, is two more removals from original form than the electro in Step 1 above.



3-A. NEWSPAPER PAGE FORM
The flat cast made from the mat is placed in the newspaper page form.

s Released to National Newspapers





See Next Page for Newspaper Page

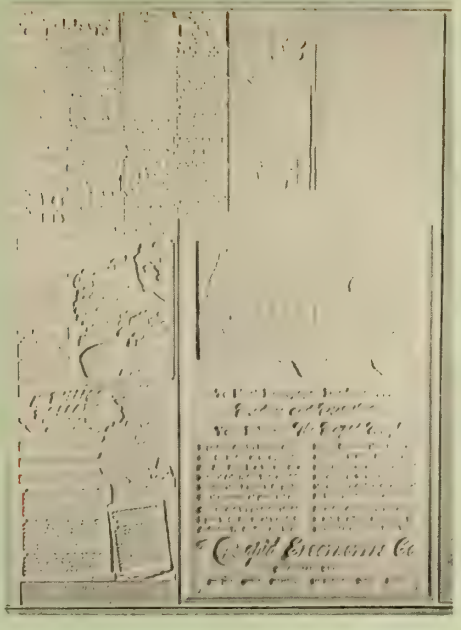
2. NEWSPAPER PAGE MAT
This is the page mat made from the form by the newspaper. The electrotype, with its extra depth and sturdy copper shell, stands up well. However, the mat loses some depth.

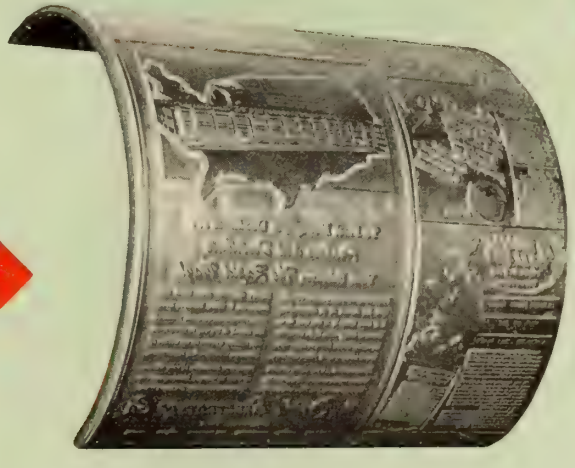
3. CURVED PRESS PLATE
This is the curved stereotype printing plate, which the newspaper makes from the page mat. In the process of casting the plate, more depth is lost.

NOTE:

Steps 2 and 3 above are the same as 4 and 5 below, except that Step 5 is two more removals from the original form than Step 3. But, in either case, it is well to note that the curvature of the press plate has a tendency to bring the bottom of the plate nearer the printing surface.

s released to National Newspapers





See Next Page for Newspaper Page

4. NEWSPAPER PAGE MAT
As in the case of Step 2 above, the newspaper makes a page mat from the page form. Here, however, the mat is the fourth removal with its consequent added loss of depth.

5. CURVED PRESS PLATE
This corresponds to Step 3 above. One or more plates are made from the mat, bolted on presses which print the newspaper at great speed.

WHY NATIONAL NEWSPAPER ADS REQUIRE SPECIAL CARE

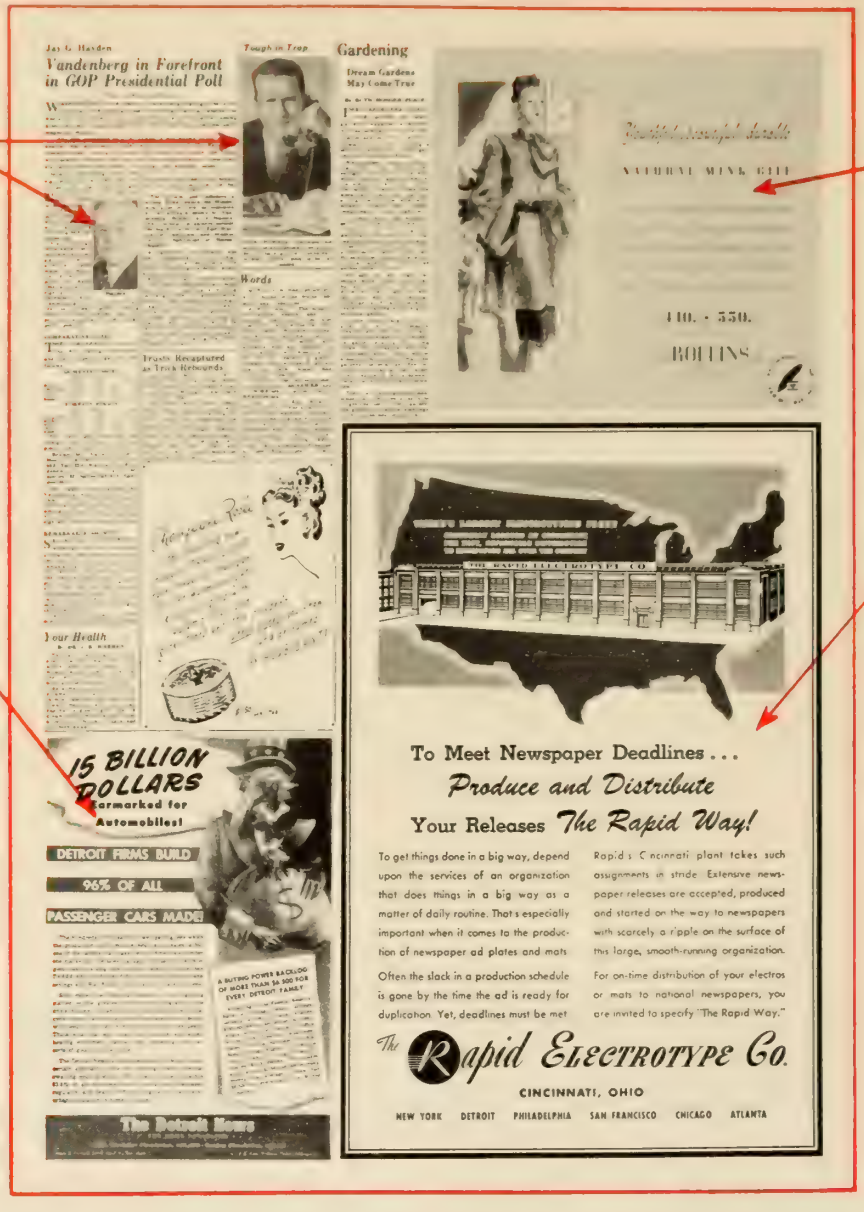
On preceding pages we have illustrated the various steps from original form to printed page. Here we show how the national advertisement competes in appearance with local advertisements and editorial material. This is another reason why original material should be prepared specifically for newspaper reproduction.

EDITORIAL CUTS

Editorial illustrations are usually printed from original plates, placed directly in the page form. In such cases, there are only two removals from the original (the page mat and the curved press plate) and 85-line screens can often be used for such editorial halftones.

LOCAL AD

Here an original photoengraving was used in the page form. It did not need to be as deeply etched as an engraving that is to be duplicated for national releases. This is true because the newspaper only mats and stereotypes the engraving for local ads. As shown on preceding pages, the national newspaper ad goes through additional processes, with some loss of depth in each removal from the original engraving.



LOCAL AD

For this local ad, a complete original engraving was placed directly in the page form. Because of only two removals, it can be of a somewhat finer screen than a similar advertisement handled on a national release.

NATIONAL AD

For the national advertisement, the newspaper is furnished an electro or a mat. As demonstrated, the electro involves three removals; the mat, five removals. Each removal means the loss of some of the original depth and printing quality. Thus, in order to compete successfully with local newspaper ads and editorial material, national newspaper advertisements must be properly prepared and duplicated to compensate for the loss of tonal values and depth throughout the newspaper reproduction processes.

USE *Rapid* FOR NATIONAL RELEASES

Whether your release should consist of ad-electros or mats, or part electros and part mats, depends to a large extent upon the advertisement itself. In weighing both the quality of reproduction desired in newspapers and the relative costs of electros and mats, we will be glad to give you the benefits of our long experience in handling all manner of releases, from the simplest to the most extensive. You are invited to make use of the services of the world's largest specialist in the production and distribution of newspaper electros and mats.

BRANCH PLANTS FOR LOCAL SERVICE

In addition to complete service for national newspaper releases, Rapid's main plant at Cincinnati and four branch plants provide job electrotypes for all commercial purposes, national magazine plates, dealer cuts and logotypes. Each Rapid plant is a complete unit in itself, yet each has the resources of the entire Rapid organization back of it. Experienced personnel is well acquainted with the requirements of printers and publications as well as the facilities of engravers and typographers. Direct your inquiries to the nearest Rapid branch or office.

THE RAPID ELECTROTYPE COMPANY

CINCINNATI 14, OHIO

NEW YORK · DETROIT · PHILADELPHIA · SAN FRANCISCO · CHICAGO · ATLANTA

PRINTED IN U.S.A.

quirements should be observed. Particularly is this true in the case of newspaper advertisements where the actual reproduction is several steps removed from the electrotype. When the electro reaches the newspaper, it is sent to the composing room and locked up in a page form. A mat is then made from the form, and a curved stereo is made from the mat. These extra steps inevitably cause a loss of depth in the plate.

Electrotypers with experience in producing electros and mats for national newspaper campaigns advise the following for best reproduction results:

1. The engraver should be allowed sufficient time to do his work properly.

2. Correct instructions and the name of the publication or printer who ultimately will print the job should be given to the engraver. Haste and lack of a thorough knowledge of such requirements are the most frequent causes of misunderstanding.

3. A good proof should accompany every order for electros, and the orders should be specific to avoid misunderstandings.

4. Sixty per cent or more of the total area of an original illustration should be devoted to light and middle tones to permit the greatest average etching depth.

5. Etching should be deep, clean, pyramid-type.

Following are recommended depths in 1/1000 of an inch and fraction thereof:

Screen grade	Light tones	Middle tones	Dark tones
50	9.0	6.5	4.5
55	8.5	6.0	4.0
60	7.5	5.0	4.0
65	6.5	4.5	3.5
85	5.0	3.5	3.0
100	3.2	2.4	1.8
110	2.8	2.2	1.6
120	2.6	2.0	1.4
133	2.4	1.7	1.0
150	2.3	1.5	1.0

A 10 per cent tolerance of these depths would be wholly acceptable and would be considered good.

These depths are not necessary on editorial or retail store engravings (two removals). They are necessary on coarse screen "master plates," from which electrotypes or mats are produced in quantities for national newspaper advertising releases (four to five removals). The above coarse screen depths are maximum requirements for national newspaper advertising engravings.

Important as is depth in a newspaper engraving, depth alone will not assure the desired clean, crisp, final results in newspaper printing. Newspaper engraving must be cleanly as well as deeply etched. This is important because the original engraving is the "master plate."

The better the "master plate," the better will be the electrotypes or mat duplicates. As electrotyping is a duplicating process, defects in the master plate should be routed closely and vertically and must be finished carefully to eliminate all wire edges, ragged edges, and shoulders.

Such defects, which may not be apparent in original proofs, usually come to the surface in newspaper printing. This is the result not only of the many removals between original and final curved stereotype printing plate, but also of the rubber blanket packing that is utilized on the fast newspaper presses.



Undercutting: Undercut originals are bad for molding because they resist releasing of mold.



Rough bottoms: Also resist lifting of the mold and frequently create a trap for printing ink.



Pyramid etch: Gives electrotyper a clean, crisp mold, facilitating release after molding.

6. For the perfect impression, the locked-up form should have guards in open spaces, and high metal. The guards bear much of the molding pressure and protect the finer details of the plate.

7. All dead metal, including 1¼-inch bearers all around, should be left in plate. The dead metal, which also is necessary for adequate bear-off against molding pressure, is required as a protection in performing various electrotyping operations, and in handling in the composing room. Dead metal should be left within an engraving where the open area is greater than one-half inch square. Dead metal is equally essential in halftones or line plates.

8. All routing should be as close as possible to printing surface. Dead metal should be routed along edge, to approximately a 45° angle, to facilitate release of original and shell from mold. This can be accomplished with a special one-eighth-inch router bit. Plates should not be routed so deep as to leave a hole through the metal. However, since practice in some newspaper plants is to rout all the way through to obtain better impression depth, it might be wise for the production man to check the newspaper's preference wherever feasible.

9. Beveling machine is to be used on straight edges, with shoulders trimmed deep and as nearly vertical as possible (approximately 75°).

10. Backs of engravings should be cleaned, smooth, and without scars or, with the exception noted above, without holes. The molding pressure causes scars on the back of the engraving to reproduce on the printing surface of the electro.

11. The engraver should be informed whether to have originals blocked or unblocked; many composing rooms require unblocked engravings.

12. Burnishing frequently produces a mushroom dot that is similar to an undercut dot, and is objectionable for the same reasons. However, if burnishing is necessary, enamel should be removed from the entire engraving.

13. The dots in a vignette should be properly etched and graduated in size until they almost disappear at the edge, but vignettes never should be attempted in publications that use no makeready.

14. Zinc halftones are not suitable for better grades of work.

15. Copper line plates are better than zinc for electrotyping. With copper, the printing surface will reproduce better and hand tooling can be done more easily.

16. For better lead mold electrotypes, it is advisable to leave engravings unblocked and all dead metal in, including bearers.

17. It is advisable that zinc line engravings not be used in subject to be lead molded as they are likely to spread under molding pressure because of comparative softness of the metal. It is difficult to release mold from a zinc original. Color process engravings should never be made on zinc. A combination of copper originals for some of the colors and zinc for others also is impractical.

18. Electros or logotypes to be inserted into original engravings should be nickel-faced, have a shell of .015 thickness and be backed up with hard metal to 16-gauge (.063) thickness, with bearers left on.

19. Each color engraving should consist of one plate. Soldering individual pieces together as one plate usually is risky, and register cannot be guaranteed.

20. Delicate scripts and hairline serifs may break down in newspaper reproduction, and small type faces may fill in. Reverse and screened type will not get the best results in newspaper printing because the ink used has a tendency to fill in. Best results are assured by using the various solid, monotone letters.

Stereotypes

Stereotyping today is a greatly improved process. (For basic data, see Cross-Reference Index on Duplicate Plate Chart.) Most widely used in newspaper reproduction, stereos can be made more rapidly and less expensively than an electro.

Because of their improved quality, they now can be considered for jobs, where economy or time are crucial factors, that formerly were not suitable for stereotyping. Specifically, the following progress has been made in stereotyping during and since the war:

Copper photo-engravings of 120-133 line screen are being stereotyped with good printing results. Direct pressure molding and the clay-based matrix have made this possible.

The elimination of material imperfections, with resultant longer wear; premakeready, and improved control over mat shrinkage give longer run, and have resulted in better quality reproductions than formerly was possible. Stereotypes for presses with hard packing (not for newspaper presses) are alloyed and have reduced porosity. A curved stereo can be nickeled from curved anodes. Four-color work, with 120-line screen, has been printed from stereos with accurate register.

Pre-makeready (see Cross-Reference Index) has been a factor improving the quality of all printing plates, originals, electros, and stereos.

Shrinkage of clay-based mats is only ½ point an inch with the grain and 1 point an inch across the grain. At this rate, a full newspaper page would shrink approximately 1/5 of an inch at most. More important, precise shrinkage per foot can be determined and controlled down to a minimum, so that it is possible now to make four-color mats in register. This is particularly applicable in printing folding cartons and registering of panels, score lines, and overall color.

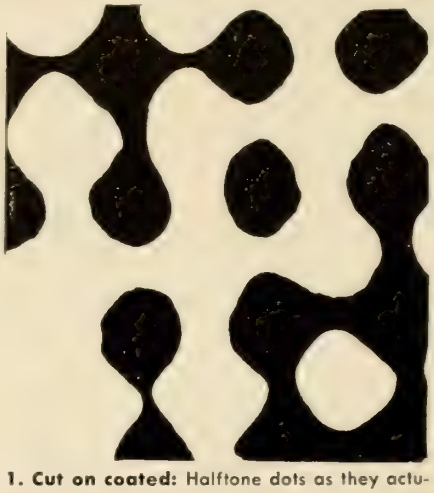
Primarily for newspaper use, mats are quickly and inexpensively made from the master plate or pattern. (For general description see Cross-Reference Index.) As mentioned above, the quality of mats is vastly improved today, particularly as regards shrinkage. Since a mat is never printed from directly, it is always used in jobs in which the final reproduction is many steps removed from the original.

When mats are sent to newspapers, there are at least five intermediate steps between the original form and the final print, each of which contributes to less depth in the plate, loss of detail, etc. To best meet this condition, engravings for jobs to be so reproduced should meet the requirements listed above.

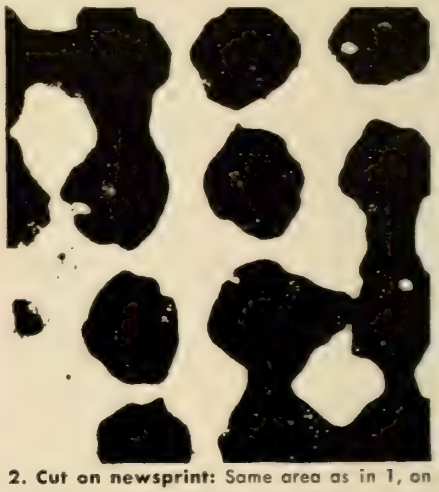
Before the mat can be made from the form, it is necessary to make a pattern plate. The pattern is simply an electrotype backed up with a special hard metal so that it will stand up under great molding pressure and for many moldings. In addition to serving as a pattern for mats, the pattern plate can be stored and later electrotype molds can be made from it.

Where better production is desired, the original halftones can be incorporated in the pattern. This reduces the steps that cause loss of depth in the plate by one. Customarily the mat cannot be made directly from a form because of the great molding pressure, which may damage the type. If many mats are required, as in the case of a national newspaper campaign, it is wise to make several patterns, so that less time is required to produce the number of mats needed and so that if one should buckle under the stress of great heat and pressure, another will be on hand, although normally a pattern should be good for 100 or more mats. When used for making electrotype molds, the pattern will gradually clog up with black lead and should be cleaned after every ten molds.

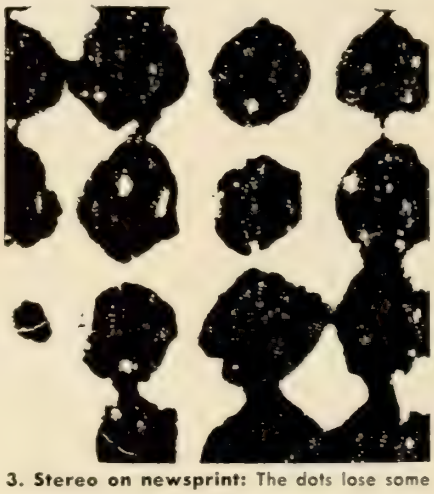
With plastic plates (see Cross-Reference Index) being relatively new, it would be well to check the publication or printer in advance to be sure he will accept plastic plates on his equipment. (Illustrations below from "Advertising Production" by Ben Dalgin, © 1946, by McGraw-Hill Book Company, Inc.)



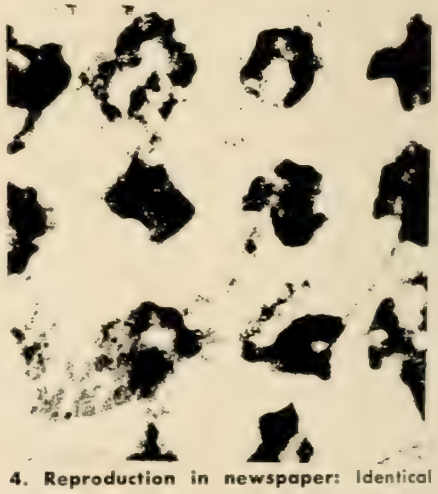
1. Cut on coated: Halftone dots as they actually are. Proof carefully pulled and enlarged.



2. Cut on newsprint: Same area as in 1, on newsprint and enlarged. Dots flatten, fill in.



3. Stereo on newsprint: The dots lose some of their solidity when the plate is stereotyped.



4. Reproduction in newspaper: Identical halftone dots as they appeared in newspaper.



from ATOM to ADAM

never underestimate the power of a DOT...

...nor the unfailing power of an electrotype...made to the precision standards of KNICKERBOCKER...to attain results of the highest quality...and the greatest perfection, in reproduction.

Knickerbocker Electrotype Company

424 WEST 33rd STREET • NEW YORK 1, N. Y. • Chickering 4-0915-6-7

Established 1910

Duplicate originals

Sturdy, high quality, patented electrotypes meet publication requirements and are more economical than several sets of originals would be

Herbert Donaldson

Production men are often faced with the problem of supplying the best possible material to several magazines on a schedule. An advertisement may be scheduled to run in four colors in Colliers, The Saturday Evening Post, Life, etc., and all the publications want the originals. Unless the insertion dates are staggered, and they usually are not, some of the publications will have to accept duplicate originals.

To get the best possible reproductions, it was often the practice in the past to have several sets of originals made. While this assured good results, it was costly and time-consuming. In recent years, several large electrotypers have developed a method of making "duplicate originals" that serve the purpose excellently and that can be produced relatively quickly and at about one-third the cost of extra originals.

Essentially, these plates are high-quality electros with a nickel face on a solid deposit of copper. They are kept in the bath for 15 hours or more so that a very thick copper plate is produced. They are shaved to thickness of .063, or 16-gauge. The extra thickness of copper makes lead backing up unnecessary.

This plate is much sturdier than the conventional electrotype or even a good pattern plate, with the result that it will withstand great molding pressure and can be molded from repeatedly. In some cases 40 or more sets of perfect printing plates have been made from duplicate originals.

Forms from which such duplicate originals are to be made should be sent to the foundry with all dead metal in, bearers on, and with a ⅛-inch channel rout. The 16-gauge of the type matter and the original should be incorporated before molding. After the molding, it is often possible to rush the 16-gauge with original to the publication with the earliest closing, if necessary, or to the publication that has preference on getting the original. Safety molds are required if originals are released before plates are finished.

There are two kinds of duplicate originals now being made. One is nickel and one solid copper. The nickel plate is usually made in three to four days, the solid copper plate five to seven days. When it may be necessary to re-etch or re-work the plate by hand, the solid copper plate is preferred.

This time allowance for the production of the duplicate originals applies to the set of four-color plates. It is in general a minimum time, and it should be understood that when the electrotyper has a heavy production schedule, as much additional time as possible should be allowed for by the traffic department.

When many sets of duplicate originals are ordered simultaneously, not all may be produced in the minimum time; an additional day or so may be needed for the full order. In such cases, it is advisable to acquaint the electrotyper with the closing dates of the various publications on the schedule so that he can ship the first ones produced to those publications needing them most urgently.

Solid copper plates

Some large publications may have difficulty getting paper of uniform quality. It is wise to supply them with the solid copper plates so that they can work on the plates if necessary. In other cases, some national advertisers demand precise color fidelity in the reproduction of merchandise or of trade-marks.

For example, originals made for The Saturday Evening Post may not meet the requirements when proved up for Collier's. Instead of making separate originals for each publication on the schedule, solid copper duplicate originals can be made and each set specifically handworked to get the desired results.

The publications do not print directly from these plates but use them for the molding of their press plates. The job may be run many up on a high-speed rotary press, and the advertiser must supply the best material to the publication to get the best printing results.

While not every electrotyper manufactures this kind of plate, there are several large plants, with facilities for national advertisers, who do so. These plates are usually advertised and sold by each electrotyper under some special trade name, and while each has its respective technical merits and advantages, all that have come to the attention of the PRODUCTION YEARBOOK editors have been excellent. All serve the same general purpose. Some of the trade names by which they are known are Atlantictypes, Reillytypes, and Royaltypes.

Almost all magazines (Curtis Publishing Company is the chief exception) will accept any of these in place of originals, but it might be a wise precaution, if one is not familiar with the magazine requirements, to check them regarding their preference of material to be sure that they will accept it.

In ordering material for national magazines, it occasionally is not necessary to obtain a set of duplicate originals for each publication on the schedule. Closing dates may permit the use of one set of plates by several publications. As a precaution, each of them should make a set of safety molds before sending the plates on to the next publication. This procedure is not recommended, but is followed by some production men working with limited budgets.

In some instances, an advertisement may be scheduled for insertion in more than one magazine of the same publishing house. When this occurs, it would be advisable to find out whether one set of plates will suffice for all the publications. Publishers such as Condé Nast, McGraw Hill, etc., may be able to use the one set for several magazines. This procedure is risky and should be followed only when the budget so dictates.

However just because several magazines on a schedule are put out by one publishing house, it should not be assumed that only one set of plates is required. The publisher may have several plants in widely separated locations and may require separate material for each.

Here's the Proof!



• Typography
Monotype, linotype, hand set composition. Traditional and modern faces.

• Engraving
Two and four color process; black and white line or halftone.

• Electrotyping
Wax, Tenaplate and lead mould electrotypes, Vinylite moulds, plastic plates, mats, and stereotypes.

...**"The proof of the pudding is *who eats it.*" More than 150 leading Advertising Agencies, Printing firms, and Publishing houses are clients of CONSOLIDATED PRODUCTION SERVICE . . . the *only* plant in New York that combines complete Typography, Engraving, and Electrotyping facilities under one roof.**

The only New York Production Service that gives you all three at the end of one telephone . . .

MURRAY HILL 6-9120

CONSOLIDATED PRODUCTION SERVICE, INC.

305 EAST 45th STREET
NEW YORK 17, NEW YORK

Breaking for color in foundry

Economical method for making multi-color printing plates from one locked-up form, whether wax, lead, or plastic molds are used; close register is maintained

Walter Flower

Although essentially a process for making duplicate printing plates from an original, electrotyping can be used to create multi-color plates from one-color forms. It can also be used to improve or modify the original plate or form in a number of other ways. For example, corner rules can be joined, ruled forms can be made with type rules, the rules being lined into a wax mold by an electrotyper.

Multi-color printing plates can be made from a one-color form by the electrotyper "breaking for color" in the foundry. Usually employed for advertisements or jobs in which the headline or signature or an initial letter or a border is to supply a second color to the job, the process can be adapted to many other kinds of copy if the production man knows how it works and therefore when he can take advantage of it.

Breaking for color can be done even though a job has been prepared for one-color printing and the form locked up accordingly. Even though it may be known from the start of the job that two colors will be used, it is often the most economical procedure to prepare only one form, with all the elements of the job in it, and let the electrotyper carry out the details of breaking for color.

Separating in the mold

To explain how the form is broken for color, take as an example a typical job in which the client decides to run two colors after a form has been locked up for one-color printing. The locked-up form is sent to the foundry. A proof accompanying the form must be carefully marked, preferably with colored crayons, to designate the color separation desired.

Upon receipt of the form, the electrotyper will make two wax molds in the usual wax cases. The two molded cases are then turned over to a workman known in the trade as a builder. The builder lays the molded cases on his bench and with a warmed, sharp, flat knife, trims off the surplus wax which has been squeezed into all the low spaces between the type in the form by the pressure exerted in molding process.

Having obtained a flat, even surface in the case with the molded type imprint clearly visible, the builder then takes a small bar of wax and a hot building iron. The iron is conically shaped like a boy's spinning top. He melts the wax bar so that the molten wax runs off the point of the iron over the words and material to be deleted. This leaves only the impression of the section of the form that is to be printed. The second mold is similarly treated so that the areas not desired for printing are obliterated. In other words, opposite colors are deleted in each of the two molds that are used.

The finisher's job

The separation of colors has now been made in the wax, and the cases are graphited and sent through the regular process of electrodeposition of the shell in the battery, removal of the shell, and backing up. The molds have now become unfinished electrotypes, ready for the finisher, who will straighten them, shave them to the proper thickness, check the foundry color separation, trim the plates, and remove unwanted high spots, etc., if necessary.

The precise procedure used in breaking for color varies from one electrotyper to another. In some cases, the color breaking is done in the finishing room after the two electrotypes are made, rather than in the molding stage. This would be especially so when a plastic mold or a lead mold job is being broken for color in the printing.

Close register

Separation of colors by an electrotyper has the advantage of close register being held because the two colors are taken from the same locked-up form. It is usually economical because the time charges of the electrotyper are moderate compared to the cost of making up and locking up two forms and proving them to assure their register. Use of black-and-white art and photo-engravings also is economical.

While it is technically possible to make only one electro and to cut it apart as per the color break instructions and block the units on two blocks in register, this procedure is not recommended. The cost of one electro is thereby saved, but this saving is offset by the additional time required to block the units in register, and such a job may not be in as perfect register is desired. Register is automatic when a mold is made for each of the colors that are to be used.

Delicate areas

When the material to be separated for color includes small type or closely spaced units, the builder may not be able to break the more delicate areas for color. In such a case, the finisher either will break for color or will complete the job started by the builder, routing out the type matter rather than by building.

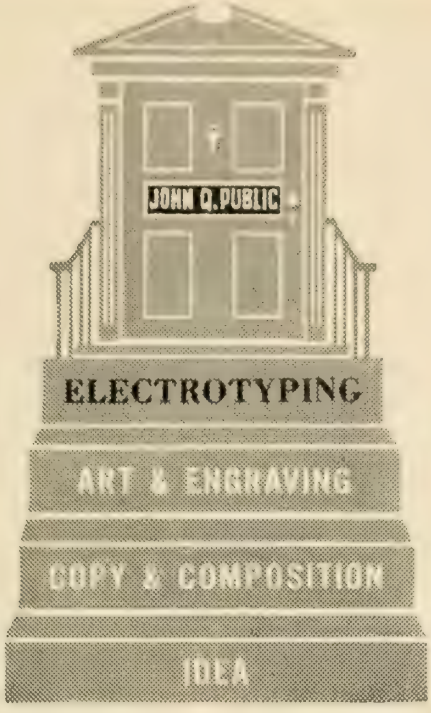
When just a large heading is to be in color, the required words are outlined by the builder and the balance of the type in the mold is left in to act as a bearer or support in the backing-up and finishing operations. The extra type is then routed out after the plate has received a final shave.

Many publishers and printers make considerable use of foundry color separation, particularly in the preparation of prayer books and similar work where only one initial at the beginning of a paragraph may be in color.

When type forms are printed from directly, further economies of time and money can be effected by letting the printer break the type form for color.

Another method of furnishing additional color that is not in the form itself can be supplied by some electrotypers by means of a wax ruling machine. With this machine, the electrotyper or wax engraver can cut diagrams around type, put borders around halftones, and of course, put rules into charts or tables that have been set up without them.

THE LAST STEP IN PRODUCTION



The campaign depends on the last step. All the previous thought and effort is reproduced in the electrotype.

The public's impression of the product is gained from the printing of the *ELECTROTYPE*, not from the engraver's proof.

Good electrotypes, securely packed, and delivered in time for publisher's requirements, with no errors in price changes or key numbers, are essential if the campaign is to succeed.

We at National have the privilege of serving leading Advertisers, their Agents and Printers, many of them for more than twenty-five years.

This privilege has been earned since 1907 by a consistent effort to deliver a quality product, through knowledge, experience and by a hearty spirit of cooperation, which enables us to solve most production problems.

We would like to serve you too.

NATIONAL *Electrotype* COMPANY

227 *to* 233 EAST 45*th* ST., NEW YORK 17, N. Y. *Telephone* MURRAY HILL 2-4700

ELECTROTYPES IN NICKEL · STEEL · COPPER · LEAD · VINYLITE · DIRECT PRESSURE DRY & TONETEX MATS

Pattern plates

Originals should be unblocked, retain bearers and dead metal, and be etched to correct depth; economy and speed result from wise use

Henderson Foulke

A pattern plate is essentially an electrotype of a form prepared with extra care to permit it to withstand considerable molding. It can be an electrotype, or it often is an electro of the type matter combined with the original halftone plate. When the original cannot be used for this purpose and the best possible reproduction must be obtained, a lead-mold nickeltype made from the original can be patched with the type electro.

When ordering an electro that will serve as a pattern for the molding of additional electros or mats, the electrotyper should be advised of this. He then will take the necessary care in finishing the electro, leaving in wide bearers and dead metal, and shaving the plate to a thickness of .165.

For large campaigns

Pattern plates are used whenever an advertising campaign is of any size or whenever it is anticipated that an advertisement will be run at a later date and it is not certain that the printing plates will be available then. In some instances, if the campaign is very large, it may be necessary to make more than one pattern.

This is done so that the pattern will not buckle before molding all the necessary electros or mats, and so that two or more electros or mats can be made at one time, speeding up production. In such a case, it is desirable to have either duplicate originals made in advance or to order sufficient lead-mold nickeltypes of the original to make the required number of patterns.

Campaigns often are so set up that mats are sent to local papers at the request of local dealers. The number of mats needed, and the time and place they will run, may not be known when the original advertisement is prepared.

In such a case, it is customary to order a pattern plate, which is kept on file at the foundry so that mats or electros can be made from it as needed on short notice. If many weekly newspapers are on the schedule, it would be wise to check whether the newspaper will accept a mat. Many papers require blocked electros or stereos.

In producing a large campaign, it is obvious that the use of the pattern involves an additional production step. The quality of the reproduction, particularly of the halftone areas, tends to decrease as the number of production steps or removals between art work and press work increases. For this reason, the utmost care should be taken in creating art, making originals, and locking up forms for the foundry for such jobs.

Not only must the correct halftone screen be used, but proper depth should be maintained in the highlight, shadow, and middletone areas. A chart showing the required depth with reference to the screen employed is on Page 169. Halftone dots should be cleanly etched, not undercut, and dead metal and bearers should be left on the original.

It often is necessary to show a client a nice looking proof without the bearers or dead metal showing. But when a halftone is not to be printed from, but is to be molded from, better results are obtained by leaving in the bearers and dead metal. If it is necessary to remove them for proofing, they can be put back, but this entails added time and expense and a possibly less satisfactory plate for molding purposes.

Blocking may mar plate

Blocking of plates that are to be molded is not recommended, as the nails may pull down the plate near them, spoiling detail and vignette effects. The routing out of dead metal that accompanies the blocking also tends to weaken the original and make it less perfect for withstanding the pressure of molding.

If the original is blocked, it may be necessary to unblock it and sweat it on metal. For this purpose, the back of the original is thoroughly cleaned, the enamel or tar is taken off, and the back is sanded so that the copper is clean all over.

Then a layer of tin foil is put on a piece of hard metal larger than the original. Acid is applied to the back of the original, which then is placed, back down, on the heavy metal. Heat is applied and the foil melts, sweating the original onto the hard metal. The plate then must be cooled and finished.

If dead metal and bearers have been routed from the original, these must be replaced in similar manner. The original next is shaved to .165. The original, sweated on, and the type electro are cut apart and patched together to meet the specifications of the approved proof. The plate then is shaved down to pattern thickness, namely .152, and finished. It is now ready to be molded from.

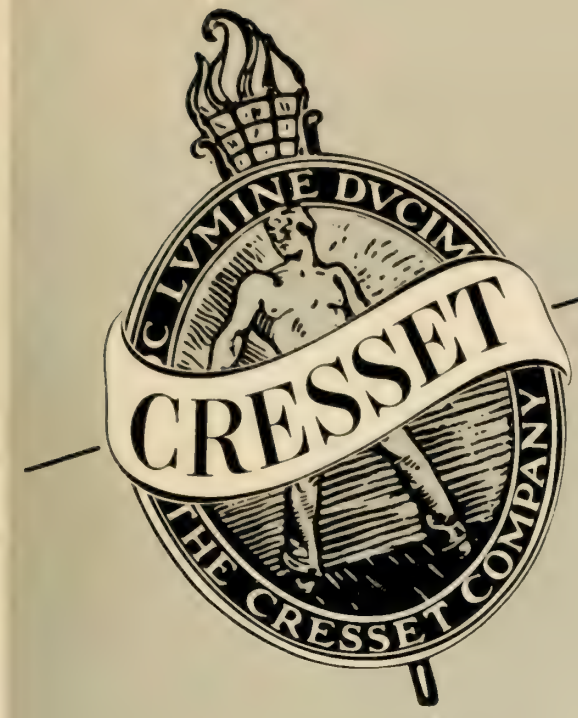
Saving in the long run

Type should be selected as regards style and size with respect to the paper on which it will be printed and the process employed. Wherever feasible, it should be new. Etched type should be avoided if at all possible.

When used properly, a pattern plate is an efficient and economical aid in producing a large number of plates for a campaign. While the actual cost of a pattern is greater than that of an ordinary wax-mold electro of the same job, its employment in campaigns usually results in savings both of time and money.

A pattern plate is a protection for an expensive original. Also, it generally is better to mold from because it has been cleaned up, the proper amount of protection has been put into open areas, and rules have been joined. If properly handled, it should be a perfect plate from which to reproduce quality electros or mats rapidly.

Pattern plates are also widely used for the production of plastic plates. For further details concerning the use and manufacture of plastic plates for ads, consult Cross-Reference Subject Index.



ELECTROTYPES

STEREOTYPES

©"PLATRIX"

MATS

PLASTIC PLATES

There is a difference . . . in the RESULTS!

Every printing plate or mat made by CRESSET is backed by 48 years' experience *plus* the "know-how" derived from constant PPR* laboratory experiments. It assures sharp, clean impressions and true tonal reproduction—regardless of subject.

Call for a CRESSET representative today.
Ask about top quality reproduction material.

THE CRESSET COMPANY

110 Greenwich Street New York 6, N. Y.
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**Printing Plates Research, Inc., of which CRESSET is the only New York member.*

EXPERT CRAFTSMANSHIP • FAST PICK-UP AND DELIVERY • RELIABLE FORWARDING

Rubber plate printing

Process is successfully used on wide variety of printing surfaces such as burlap, cellophane, glassine, cloth, paper, wood, metal, and glass

Thornton Williams

Recent advances in the technique of printing from rubber plates have brought this phase of relief printing greatly increased attention as a branch of the letterpress field. Hand-engraved rubber plates have been used for many years for printing corrugated cartons, cloth and paper bags, and by converters of paper products. Such printing, however, was usually restricted to copy with large solid areas and block- or stencil-type letters.

Molded or vulcanized rubber plates are now capable of reproducing type, line engravings, and halftones that are as fine as 100-line screen.

Features

Features that are claimed for rubber plate printing include adaptability to hard, grained, or rough printing surfaces; good quality reproduction of solids and brilliant colors without mottling; economy in ink consumption; little wear and tear on printing press; kiss impression in printing; quick ink drying qualities, permitting high press speeds; nonstretch; elimination of smash-ups from buckled sheets or loose plates; the avoidance of embossing or punch-through on back of sheet, as well as the accomplishment of a number of special effects frequently desirable in letterpress or relief reproduction work.

Scope

Rubber plate printing is being used successfully on burlap, cellophane, celluloid, glassine, waxed paper, cloth, fabrics, paper of all kinds, wallboard, wood, bags, covers for boxes, cardboard, corrugated and fiberboard, metal, metal foil, envelopes, tissue, fiber, parchment, and glass. It is very versatile.

Making the plate

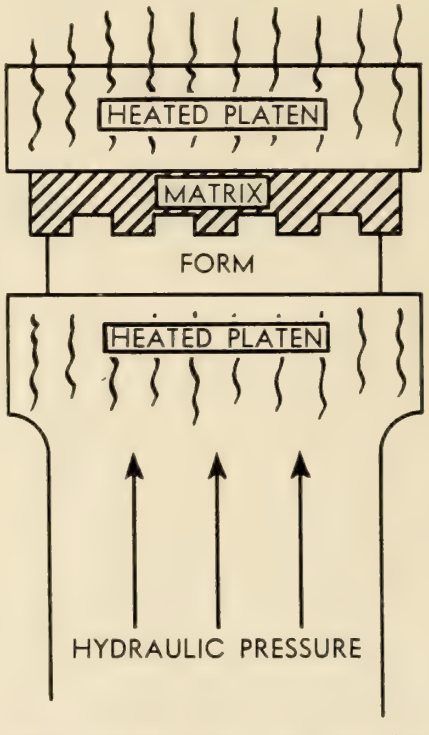
The molded rubber plate is a duplicate, in the same sense that an electrotype or stereotype is a duplicate of an original metal printing surface. Rubber plates can be made from type, photo-engravings, electrotypes, stereotypes, or any combination of these when properly prepared, but not from wood or linoleum blocks.

The process consists of molding a matrix from the form, then molding (vulcanizing) a rubber printing plate from the matrix. A single unit of equipment, a hydraulic press with steam or electrically heated top and bottom platens, is used to produce both the matrix and the plate for printing.

The matrix

The form, usually locked up with type-high bearers all around, as in the case of a form for electrotyping, is placed on a table of the press that slides in to rest on the bottom platen.

A sheet of matrix material, made of synthetic thermosetting resin, is put on the form, on either side of which have been placed bearers or shims that govern the depth to which the form goes into the mat. Mat and form are slid into the press, preheated for a minute or two until the resin becomes plastic, then pressure applied.



Matrix molding: Pressure forces matrix into the form. Heat plasticizes molding material.

The mat is allowed to cure for about 10 minutes at a temperature of approximately 300° Fahrenheit. The form is then slid out of the press and the mat removed from the form, or master.

Three of the four types of matrices in common use today are based on the above use of resin-faced composition sheets. The fourth type is the clay mold form, which consists simply of the application of prepared clay to a flat metal base.

The type composition, either wood or metal, together with design patterns for pictorial work, are assembled, locked in a steel chase, and the entire form impressed into the clay while the clay is in a damp, easily deformed condition. The original pattern work then is removed and the formed clay matrix thoroughly dried and baked hard before being used in the manufacture of rubber plates for purposes of printing.

The plate

After certain preparatory operations, the mat is laid face up on the table, and covered with a sheet or strips of unvulcanized rubber. Heat and pressure are applied as in the case of the mat. The rubber is cured for about ten minutes, removed from the press, trimmed, and is then ready for mounting.

Stretch

Where the rubber plates are to be used on cylinders for rotary printing, allowance must be made for their stretch in the direction of the curve of the cylinder. This stretch varies according to the diameter of the cylinder, thickness of the plate, and nature of the subject. Type forms and metal patterns may be



The name "BUNTIN" has been synonymous with the best that can be had in Electrotypes, Stereotypes and Mats . . . for more than a quarter of a century. It has meant a quality of reproduction that, even the most critical buyer agrees, compares favorably with the finest originals. J. T. Buntin—frankly—insists on quality . . . yet the dependable SERVICE this experienced organization renders in deliveries, shipping, the elimination of "schedule and closing date" headaches, has won it a host of friendly year-after-year customers . . . Every known method—every type of modern equipment . . . many exclusively our own . . . is available in this plant. Men with years of experience in every printed medium are waiting to help you. A phone call will bring one—glad to confer with you on any problem—without the slightest obligation, of course.

ELECTROTYPES

J. T. BUNTIN, INC.

228 EAST 45TH STREET · NEW YORK CITY

MUrray Hill 2-2455

pulled in a predetermined amount in the direction of the curve to allow for this stretch.

As to "nonstretch" plates, various materials are incorporated in the rubber compound during its manufacture to prevent the vulcanized plate from the hazards of opening up on curving.

Mounting

Rubber plates may be attached to any standard type of printing press. Several methods of mounting are employed. The rubber plate may be mounted on wood for use in a flat-bed press form. It may be attached to a stereotype metal backing for fastening to metal bases on a flat-bed press. Sheet zinc and lead are also used as backing material for rubber plates for metal bases; thus a plate having an overall thickness of 11 points (0.152 in.) is obtained.

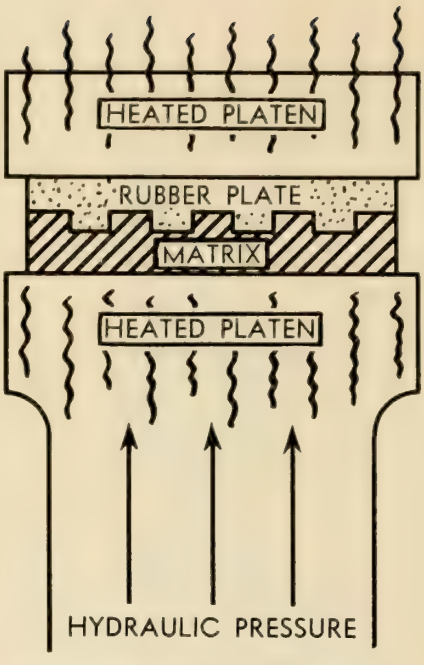
For the printing cylinder of a rotary press, the plate may be backed up with an adhesive fabric and pressed in position on the cylinder, or backed up with flexible brass that is readily adaptable to the curves of the cylinder. By crimping the brass at either end, it will fit grooves provided for that purpose in the cylinder. The adhesive-backed plate may also be attached directly to the metal base of plastic blocks.

The adhesive back is applied after the rubber plate has been removed from the vulcanizer; a brass, lead, or zinc back may be fastened permanently to the plate during the vulcanizing process.

Makeready

Because of the very light "kiss" impression required in printing from rubber plates, great care must be used at all steps to obtain precision plates. The master form, the matrix, the rubber plate, and the backing material must all be accurately made, and pre-tested with a micrometer gauge for uniformity of the height before the plate is put on the printing press. Properly made rubber plates do not vary more than one- or two-thousandths of an inch in thickness.

Given a properly made plate and a press in good condition, makeready is reduced to a minimum (this is also true of metal plates), but it must be exact. Differences in level of the printing plane cannot be equalized by press squeeze. Too much impression spreads the plate out of shape, thickens and distorts type and lines, and causes accelerated wear of the plate shortening its press run.



Molding plate: Rubber sheet is placed over matrix, and heat and pressure are applied.

Rubber plates ready to run are from .002 to .006 inches less than the printing height usually specified for metal plates. On a flat-bed press, hard packing is used, flush with the bearers, then built up with overlays and underlays to a kiss impression. Less areas and thicknesses are used in making ready a rubber form than are customary with metal.

Swell

The rubber's absorption of natural crude oil from the ink during a run causes a slight swelling of the plate, thereby raising the printing surface. The average swell is about .003 of an inch in a plate .085 inches thick, for example. If the swell is greater than this, it is probably caused by the heat of friction when too much impression is used.

After the swell has occurred (after about 5,000 impressions) during a run, the increased pressure can be reduced by removing a corresponding amount of tissue overlay from the packing. It is essential that four or five tissues be placed in the overlay for this purpose. This swelling is not found, however, with plates made of Buna N compounds.

Ink

Rubber plates do not require much ink, and in a great many cases can effect a substantial saving. Great affinity for ink by rubber and transference of full charge of ink to paper make it possible to carry less ink on rollers. Because much less ink is laid on the stock, drying is faster, offset is considerably reduced, and higher speeds can be obtained.

Some solvent oils, varnishes, driers, kerosene, machine oils, and petroleum oils are more injurious to rubber plates than to metal. The manufacturers are supplying inks of medium body, soft halftone ink of butterlike consistency, eliminating harmful oils, resin varnishes, and driers, and substituting linseed and vegetable oils together with heavier pigmentation. These inks exert a less harmful action on the plates, but actually no oil base ink may be considered ideal.

Synthetic rubber plates

Synthetic rubber printing plates have nothing in common with rubber plates except flexibility, because the synthetic is manufactured from coal tar products. These synthetic plates have proved particularly advantageous where oil inks are used, as they are not affected adversely by oils. For a full description of plastic plates consult the Cross-Reference Subject Index in this volume.

Register for color

A device recently put on the market, the Opti-check, now achieves fine register when putting rubber printing plates onto plate cylinders. After the operator has located his key plates on the first cylinder and spaced them correctly with the machine's precision hairline locating guide, the key cylinder is placed in the rear of the machine and the cylinder for the second color in the front.

By looking into the viewer of the machine, the operator superimposes the second color plates over the first, clearly seeing every printing surface exactly as it will appear when printed. This step is repeated for the third, fourth, and as many more colors as may be desired. With this precision registering, it is claimed that makeready time is reduced to a basic minimum.

Rollers

Medium hard rollers, preferably of rubber or synthetic rubber, are best for rubber plate printing. They must be set light on the form for kiss impression. Just enough ink to cover the printing surface of the plate should be carried. Frequently, one or more form rollers are removed, to reduce the ink used.

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Halftone screens

Anything that can be printed from a metal surface can be printed from rubber plates, except fine halftone screens. Screens up to 100-line print satisfactorily, with 85-line screen the practical limitation in fineness. Experimentally, four-color process work with 133-line screen has been tried with some success, indicating future possibilities for halftone printing from rubber plates.

The efficacy of a rubber reproduction of a screen is governed not so much by its fineness, however, as by the depth of its etching. There should be at least .015 inch relief in the highlights.

If this amount of relief can be obtained in a 133-line screen, the plates can be printed satisfactorily; if an 85-line screen does not have this depth, trouble may result. To avoid undercutting, caution must be exercised by the engraver when etching a plate to be reproduced in rubber.

The rubber plate prints all of the dot, giving a darker tone to the whole printed picture. It is usually better, therefore, to use a screen a degree coarser than would be used in printing from metal; i.e., an 85-line screen to get a 100-line screen effect with a rubber plate. A two- or three-tone halftone with sharp contrasts will produce better printed results from rubber than one with more tones or fine gradation.

Rubber compounds are made of different compositions and may be cured to various degrees of hardness to suit different kinds of rubber plate jobs. Hard rubber is used when printing a form containing small type, rule work, and halftone or Ben Day screen. Soft rubber is used on forms to be printed on rough or irregular-finish surface and metal, or where large solid areas predominate. Certain rubbers will yield more impressions or will vary in oil resistance.

Cleaning plates

Rubber plates should not be allowed to stand, inked, when not in use. Alcohol or special rubber plate wash should be used, as kerosene, gasoline, and metal-type cleaner are injurious.

An efficient rubber plate cleaner is light petroleum naphtha. Naphtha gas mixtures and carbon tetrachloride are frequently used. Rubber plates should be cleaned by wiping them with a lintless cloth moistened with the cleaner. The cleaner never should be poured on the plates themselves.

Storage

If properly stored, rubber plates may be kept indefinitely for future use. Adhesive mounted plates, after being washed and dried, should be put back on Holland cloth to preserve the sticky back, and filed in envelopes or wrapped in news stock, and stored in a cool, dry place, away from light and heat.

Plates can be filed on top of each other, but weight should be distributed evenly over the whole surface. Copper or brass should not be permitted to touch the rubber printing surface at any time, especially when filing.

Matrices, too, may be stored indefinitely, and used for making new plates in case of a rerun. Matrices require only one-fourth of the space of standing forms of printed or plated matter.

Aniline printing

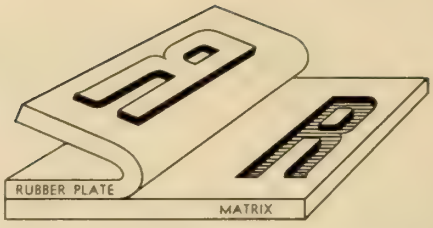
So-called "aniline printing" from rubber plates on specially built, high-speed rotary presses is used extensively in the paper bag industry. (See Cross-Reference Index on Aniline Ink.)

Offset imprinting

Offset lithography and rubber plate relief printing are being combined successfully for imprinting. Typical examples of this sort of work are: advertising material that must carry individual dealers' names; address and price changes; letterheads and invoices with address and telephone changes; labels with changes in contents; sales and counter tickets with department changes; office and factory forms with department and column changes; last-minute changes in price, description, or other small copy revisions.

Where a change of copy is to be made, a small area of the offset blanket and packing is cut away, exposing the cylinder to accommodate the rubber relief plate (made to the same thickness as the blanket and packing), which is secured to the cylinder by an adhesive back. The corresponding area in the offset metal plate is then made water-repellent to attract the ink, which in turn is transferred to the relief plate at the same time that the offset plate transfers its image to the offset blanket.

The rubber relief image in the imprint and the planographic image on the offset blanket are then transferred simultaneously to the paper or other material being printed. Subsequent imprint changes can easily be made by removing one rubber plate and putting the new one as a substitute in its place.



Finished plate: The molded rubber plate is removable from the matrix. Raised letter formed by the pressure forcing the uncured rubber into the reverse-impression letter of the matrix.

Letterpress imprinting

Similar results on letterpress work are obtained by attaching adhesive rubber inserts on electrotypes routed out for the purpose or on spaces in a form. It is not practicable to run large rubber plates in a form with metal.

Rubber plates have been adapted to book work. A two-cylinder, web-perfecting rotary press prints 32 pages of standard book size on each side of the web at one operation. This press is also suited for combination runs of letterheads and forms, and for all-over print jobs such as fancy wrapping paper. An oil ink especially manufactured for rubber plates is used for this purpose.

Technical improvements

Improved materials have removed most of the difficulties encountered in earlier rubber plate printing. Manufacturers of rubber are making rubber compounds and synthetic rubberlike materials that have better molding characteristics, are resistant to the deteriorating effects of the oil-base inks and destructive plate washes, resistant to the action of aniline inks, and more abrasion-resistant to permit the greatest possible plate life under normal printing conditions.

Runs up to 500,000 impressions with oil inks and plates made from oil-resistant rubber are not unusual; even longer runs with the still more oil-resistant synthetic rubber plates are regularly accomplished. Successful runs into millions have been made with aniline printing.

As previously stated, ink manufacturers are producing inks of materials that are less harmful to rubber and of a consistency better suited to the ink-attracting quality of rubber. Shrinkage-controlled matrix materials and techniques have been developed, thus improving register in color work.

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Plate correcting

Damaged plates can often be repaired quickly and economically; old plates readapted for new jobs by wise use of electrotyper's equipment

Herbert Lindner

A considerable amount of time and money can often be saved by "correcting" a damaged printing plate instead of having a new one made, or by adapting a plate on hand instead of making a new plate.

Damaged electrotypes, halftones, and line plates all can be rescued for further use by skilled craftsmen. Many hours of press time are often saved. Replacing a halftone that has been scratched after the form is on the press might entail a stoppage of six to eight or even more hours. But if the plate is sent to an expert corrector, it is often possible to have it repaired and back on the press running within an hour or two. In the same way, a battered line plate can be quickly hand tooled and depressed sections built up, saving the time and money required to make a new plate.

Avoid press delays

The greater part of the expense in repairing a damaged plate when a job is on the press is not because of the repair cost but because of the resultant press delays, which may cause large presses to stand idle for one plate, or which may disrupt a whole printing schedule. The best and most economical way to inspect and repair plates is before they are shipped to the printer, thereby avoiding many last-minute repair jobs.

Frequently a production man is called upon to produce a job, in proof form, almost overnight, and all too often that job has to be kept within strict budget limitations. Perhaps the first thing to be done in such an instance is to ascertain whether an old ad plate can be used as is. If not, perhaps a new layout can be made that will take advantage either of old art work on file or, better yet, from the viewpoint of both time and budget, of an old plate.

For such uses, the old plate should be viewed much as an expert picture editor views a photograph. It should be viewed not merely as is, but with a visualization of all the croppings and adaptations that can be made of the cut, especially by some of the inexpensive and rapid services described below.

Common corrections

The electrotyper can do much to rehabilitate or readapt a damaged or an old plate, and his services should be kept in mind. Some of the most frequently used plate correcting operations are:

Anchoring: Attaching solid surface plates where no shoulder is available for nailing to a wood block. Holes are drilled in the wood block, and the plate is attached by filling the holes with solder, which adheres to the back of the plate and holds it to the wood block.

Backing-up: Adapting blocked plates for use on patent base. Low areas on plates, both blocked and unblocked, are brought up. The plates are backed up with regulation lead to type height for patent base printing, then bevelled to take the patent base clamps. Low surface areas are hammered out and backed with solder.

Bevelling: Tapering unblocked plates at edges to take patent base clamps; also cutting ridges at edges of the plates to take nails for nailing to wood blocks.

Blocking and reblocking: Nailing unblocked plates to wood blocks. Plates are removed from worn or split wood blocks and put on new blocks, reblocked at an angle on square blocks for printing on a bias, or reblocked for register printing where they are out of register.

Burnishing: Taking out scratches on halftones and solid tint blocks. The plate is burnished with stone or charcoal to remove the scratches. Halftone dots are replaced by re-etching where necessary.

Cropping: Trimming or cropping plates that are over-size or need some of their shoulder removed so that type can be placed close to the plates. A variety of saws to do coarse or fine work is a key part of the plate corrector's equipment.

Cutting apart: Plates that are two or more up where sections are out of register are cut apart so they can be registered with ease and precision.

Hand tooling: Cutting out extra pieces of metal from plates, tooling in letters or numbers in solid sections of plates, or fixing letters that have been filled in. Tooling is done entirely by hand, usually under a strong magnifying glass.

Inserting new type: In the case of a battered type electro, time can be saved by sending to the plate corrector the battered electro along with new type lines to replace the smashed portion of the plate. The corrector mortises the battered sections, inserts the new lines, solders them to the plate, and finally burnishes the back.

Mortising: Cutting out complete sections of plates, both wood and metal. There are outside and inside mortises. Outside mortises have an open end at one side of the plate; inside mortises are cut out of the middle of the plate with no open end. Used when new type material is to be printed with an old plate, or for imprinting special changes that, it is intended, are to be set in type.

Patching: Fixing sections of plates that have been battered or broken. Battered parts are routed out and new type is soldered to these sections. Where plates are split, they are soldered and burnished so they will print the same as before the split occurred.

Re-etching: Bringing damaged halftone dots back to their original printing quality. Entirely a hand operation, using a pick or graver for dot laying. The plate is then burnished.

Routing: Removing excess non-printing metal that is too high, and removing material left on the plate by error. This is done with a routing machine, supplemented by hand tooling if the nature of the correction should require such work.

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Making the electrotype

Sixteen basic steps in manufacture of wax mold copper electrotype from molding of form to blocking of the finished plate graphically analysed

Compiled by the editors

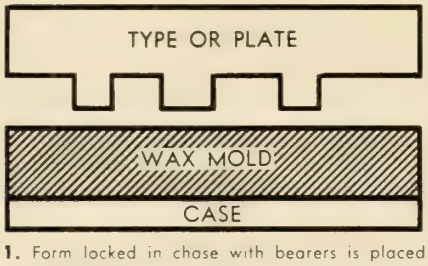
Essentially, an electrotype is made in two general steps; molding the original and electro-depositing a metal shell on the mold. Actually, there are a number of other vital steps that take place in the foundry, the more important of these being described and illustrated below.

The material used in the mold has an important bearing on the quality of the finished job. Generally the mold is made of wax, lead, Tenaplate, or a plastic (commonly called Vinylite). Wax and lead are the conventional materials. A wax-mold electrotype is less costly than the lead mold, and while quite adequate for line copy it does not reproduce the fine detail of halftone and process plates as well as will a lead mold.

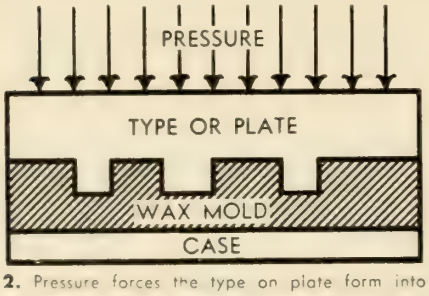
Tenaplate is a patented material, claimed to reproduce detail better than will a wax mold. Vinylite-mold electros are a fairly recent development and many plants do not have the facilities for producing them as yet. Of those plants that are now making them, experience is not uniform. More successful plants are enthusiastic and claim they are superior to lead molds.

The metal deposited on the mold is usually copper, although for long run jobs or when lead molds are used, the electrotype surface is often nickel or steel or chromium.

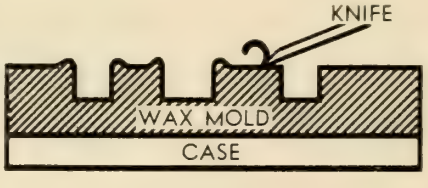
The following illustrations and captions are intended to depict the basic procedure in the making of an electrotype. Although a wax mold copper electrotype is followed through production, the general procedure is similar regardless of the mold or surface used. When a plastic mold is used, it is possible to eliminate some of the preliminary steps described and to spray the mold with silver solution to sensitize it rather than to brush it with graphite.



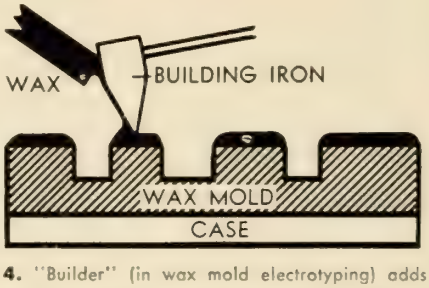
1. Form locked in chase with bearers is placed on the wax when used as the molding medium. For lead or Tenaplate, the reverse is true. Bearers are metal guards surrounding the form. Wax is on a metal base. The whole is known as a case. Lead molds and Tenaplate molds are mounted on cases covered with wax for the plating operation.



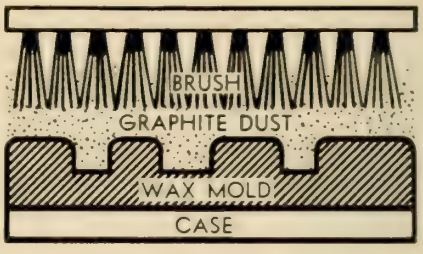
2. Pressure forces the type on plate form into the wax molds producing a reverse impression.



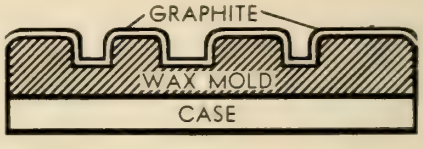
3. In wax mold electrotyping the "builder" removes excess wax that was squeezed up in the molding. A sharp, warm knife is used. Excess wax is shaved down to the level of the impression of the shoulders of type, so this area will not print.



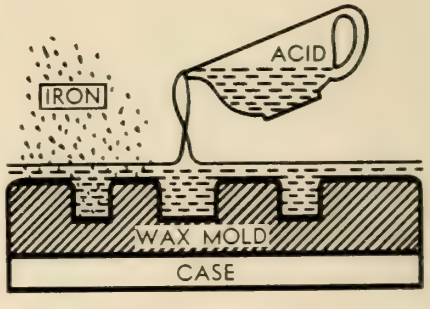
4. "Builder" (in wax mold electrotyping) adds wax with heated, pointed iron, filling in blank or open spaces. These built-up areas become depressions in the plate preventing smudging in print.



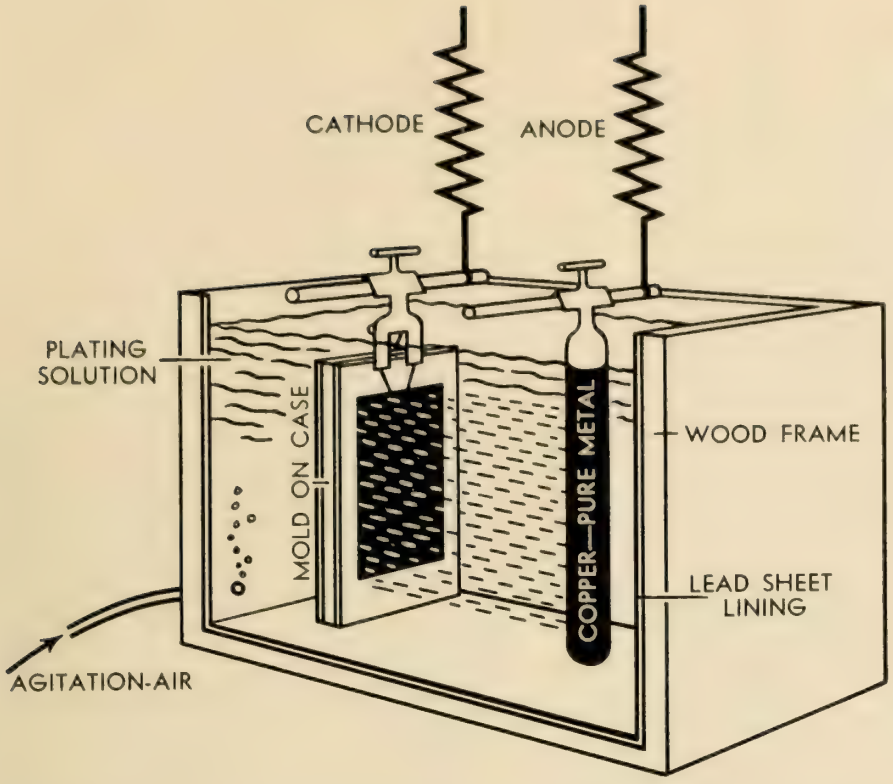
5. Microscopic film of graphite applied to wax, making the wax surface electrically conductive. Graphite can be sprayed (wet graphiting) or brushed (dry graphiting) on wax. Lead molds do not need graphiting; plastic plates use silver spray instead of graphite, a much cleaner process.



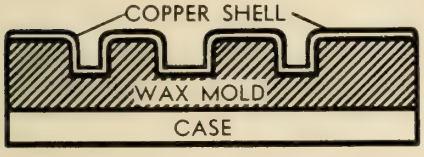
6. Mold with even graphite layer on the surface.



7. A preliminary film of copper is chemically precipitated on the wax mold over a graphited surface. A slightly acid solution of copper sulphate is used. Iron powder is used to replace the copper in solution causing the copper to coat the face of the mold. Although the deposition of the copper film in this step is very slight, it serves primarily to provide a base to speed up the electrodeposition of the copper that forms the copper shell, as is shown in the illustration on page 187.

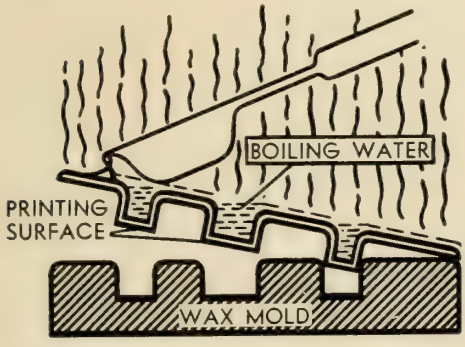


8. Electricity enters electrotyping solution through anodes, copper sheets, or slabs, passes through solution, leaves through cathode or wax case, depositing copper on graphited surface of wax mold. Similar procedure is used for Tenaplate molds. Deposit requires half-hour or more depending on thickness of copper shell desired. Average shell is from .006" to .008" thick. For nickeltyping, solution of nickel salts is used and a nickel anode (slab or cylinder) replaces copper anode. Nickeltyping is more expensive, yields longer runs, resists abrasion of certain inks more than copper. A copper electrotype may receive a surface plating of nickel or chromium for very long runs or where particular inks are to be used that would abrade copper. Some of the detail is usually lost in nickel plating, but no detail is lost in chromium plating.

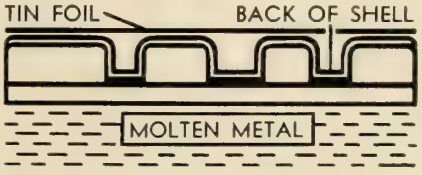


9. The copper shell has been deposited evenly over the mold and is ready to be removed. Shell at this point is about .007" thick. If the graphiting has been carefully done, there should be no holes in shell. Shell is now released from mold

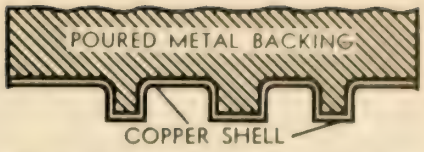
10. Continued
function as far as the making of this electrotype is concerned. The mold is always destroyed during the removal of the shell. The wax is remelted and can be used again. A nickel shell can be removed from lead by stripping the lead from shell, much as if you were peeling tin foil from wax paper from a pipe tobacco covering. Shells are removed from Tenaplate molds in almost identically the same fashion as they are removed from wax molds. Plastic molds can be reused.



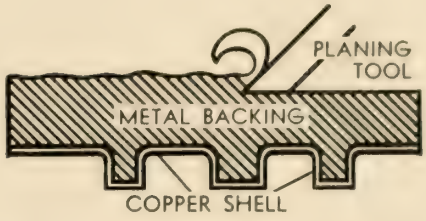
10. Boiling water causes the wax to release the copper shell easily. The mold has now served its



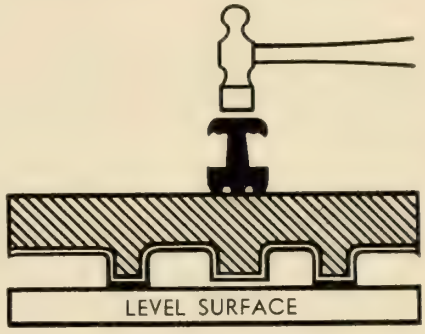
11. Shell back is soldered with tin foil to effect a perfect bond with the electrotype metal added in, shown in Figure 12, atop the next column.



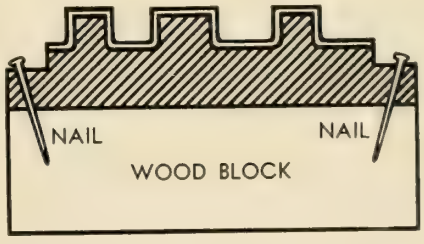
12. Whole back is then filled with molten metal, to give plate rigidity and strength, to a thickness of about a quarter of an inch. Rough back ready to



13. Uneven back is smoothed on a rougher and shaved to approximately .152", or 11 points. This is the standard thickness of an electro for patent base printing. Electrotypes to be wood blocked and to print in a chase are often less than 11 pts. thick. Wood block brings them up to type-high.



14. Plate surface is brought to a plane by leveling from the back. A final shaving brings the plate to an accurate thickness. The nonprinting areas of the plate are routed or tooled down more deeply to make sure that they cannot receive ink or smudge paper during printing.



15. The levelled plate wood-mounted type-high.



16. The plate is bevelled to lock on patent base.

Duplicate plate estimator

The following table lists the unit-value figures for 40 different kinds of duplicate plates. To determine the unit value of a duplicate plate:

1. Determine square inch area of plate, including printing area and margins for nailing or bevelling.

2. Determine class of plate (1 to 40) from accompanying list.

3. Point of intersection on unit-value table (below and on next page) of square inch area and of class number is the unit value.

4. To determine price, multiply unit value by selling rate of supplier, or refer to Price Calculator tables on Pages 139 to 148.

Plastic printing plates are fairly new and their unit values are not standardized as of the time of this compilation.

For odd-shaped electrotypes, the values listed herein vary somewhat. There are extra-time charges for such operations as plate backing, blocking, mortising, notching, routing, registering, cropping, building up, joining rules, and locking up.

Electrotypes, wax mold, copper,

unless noted otherwise

No.

1. Line, unmounted.
Shell, extra heavy, line.
Matrix pattern, line.

2. Shell, halftone, Ben Day, regular.
Line, mounted or curved.
Nickel (or steel), line, unmounted.
Halftone, Ben Day, unmounted.
Matrix pattern, halftone, Ben Day.

3. Halftone, Ben Day, mounted, or curved.
Nickel (or steel), line, mounted, curved.
Nickel (or steel), halftone, Ben Day, unmounted
Line, 16 gauge.

4. Nickel (or steel), halftone, Ben Day, mounted, curved.

5. Line, safety mold.
Blocking, wood.

6. Halftone, Ben Day, safety mold.

7. Line, solid metal base.

8. Halftone, Ben Day, solid metal base.
Nickel (or steel), line, solid metal base.

9. Nickel (or steel), halftone, Ben Day, solid metal base.

10. Shell, line, regular.

11. Backing shell.

12. Shell, halftone, Ben Day, regular.

Electrotypes, lead mold, nickel or steel

13. Unmounted.

14. 16 gauge.

15. Line, 18 gauge.
Halftone, Ben Day, 18 gauge.

16. Line, safety mold.
Halftone, Ben Day, safety mold.

17. Solid metal base.

18. Shell, regular.

19. Shell, extra heavy.

20. Mounted, curved.

Electrotypes, plastic or Tenaplate mold

21. Copper, line, unmounted.
Copper, line, finishing from mold.

22. Copper, halftone, Ben Day, unmounted.
Copper, line, mounted, curved.
Copper, halftone, Ben Day, finishing from mold.
Nickel (or steel), line, finishing from mold.

23. Copper, halftone, Ben Day, mounted, curved.
Nickel (or steel), line, mounted, curved.
Nickel (or steel), halftone, Ben Day, unmounted.
Copper, line, 16 gauge.

24. Nickel (or steel), halftone, Ben Day, mounted, curved.

25. Line, safety mold.

26. Halftone, Ben Day, safety mold.

27. Nickel (or steel), halftone, Ben Day, finishing from mold.

Multigraph plates, binders or embossing stamps

28. Multigraph plate, nickel (or steel), half tone, Ben Day.
Binders or embossing stamp, copper, line.

29. Multigraph plate, copper, curved.

30. Binders or embossing stamp, nickel (or steel), electrotype, halftone, Ben Day.

Mats

31. From unmounted electros, patterns, or originals. (Dry mats.)

32. From forms, not including preparation of forms. (Dry mats.)

33. From unmounted electros, patterns, or originals. (Baked-out mats.)

34. From forms, not including preparation of forms. (Baked-out mats.)

Stereotypes

35. Unmounted, from matrices, unmounted pattern, or original.

36. Mounted.

37. Wood mounted, nickel face.

38. Cast type high.

Blocks

39. Wood.

40. Metal.

Total square inch area of plate

No.	1	2	3	4	6	9	12	16	20	25	30	36	42	49	56	64	72	81	90	100	110	121	132	144	156	169	182	196	210	225	256	352	No.
1	29	31	33	36	40	46	52	60	68	79	89	101	113	128	142	158	175	193	212	232	253	275	298	322	347	373	400	429	457	491	565	795	1
2	36	39	41	45	50	58	65	75	85	99	111	126	141	160	178	198	219	241	265	290	316	344	373	403	434	466	500	536	571	614	706	994	2
3	44	47	50	54	60	69	78	90	102	119	134	152	170	192	213	237	263	290	318	348	380	413	447	483	521	560	600	644	686	737	848	1193	3
4	51	54	58	63	70	81	91	105	119	138	156	177	198	224	249	277	306	338	371	406	443	481	522	564	607	653	700	751	800	859	989	1391	4
5	8	8	9	9	10	12	13	15	17	20	23	26	29	32	36	40	44	49	53	58	64	69	75	81	87	94	100	108	115	123	142	199	5
6	9	10	10	11	13	15	16	19	21	25	28	32	35	40	45	50	55	60	66	73	79	86	93	101	109	117	125	134	143	154	177	249	6
7	73	78	83	90	100	115	130	150	170	198	223	253	283	320	356	395	438	483	530	580	633	688	745	805	868	933	1000	1073	1143	1228	1413	1988	7
8	80	86	91	99	110	127	143	165	187	218	245	278	311	352	391	435	482	531	583	638	696	757	820	886	955	1026	1100	1180	1257	1351	1554	2187	8
9	87	93	99	108	120	138	156	180	204	237	267	303	339	384	426	474	525	579	636	696	759	825	894	966	1041	1119	1200	1287	1371	1473	1695	2385	9
10	20	21	22	24	27	31	35	40	46	53	60	68	76	86	95	106	117	129	142	154	169	184	199	215	232	249	267	286	305	328	377	530	10
No.	**1**	**2**	**3**	**4**	**6**	**9**	**12**	**16**	**20**	**25**	**30**	**36**	**42**	**49**	**56**	**64**	**72**	**81**	**90**	**100**	**110**	**121**	**132**	**144**	**156**	**169**	**182**	**196**	**210**	**225**	**256**	**352**	**No.**

Total square inch area of plate

PLATE PRECISION-ENGINEERING

ELIMINATES MORE THAN HALF YOUR PRESS WORRIES

Only we in the New York metropolitan area can offer such plates.

Our precision plate-making equipment was developed by the engineers of the Claybourn Division of C. B. Cottrell & Sons Co.

Our plates are uniform in thickness to a .0005 inch tolerance.

They come in 12½, 14, and 16 inch curves.

Properly inspected and tested before delivery, they remain accurate under continuous service.

Proved on precision curved proof presses, their printing qualities are evident before you start to use them.

They are true arcs, the printing surface unstretched and undistorted, to assure perfect register for color printing.

All this adds up to saving you a lot of pressroom trouble.

NEW YORK ELECTROTYPING COMPANY CIrcle 6–6295
311 West 43 Street
New York 18, N. Y.

PLASTIC MOLDED ELECTROTYPES

made by the **PPR** *process*

The **PPR moulding process** is the authentic and proven method of making plastic molded electrotypes. This process produces finer printing plates . . . insures faithful reproduction . . . eliminates hard edges . . . duplicates true tone values . . . produces full depth of engravings and type . . . permits quicker electrotype service.

The Cleveland Electrotypers listed below, who produce these better electrotypes, are members of Printing Plates Research Inc., under whose sponsorship **PPR moulding** was developed and perfected.

p r p
INC.

THE ACE ELECTROTYPE CO.
THE AMERICAN ELECTROTYPE CO.
THE ART ELECTROTYPE CO.
THE CENTRAL ELECTROTYPE CO.

PLANTS LOCATED IN CLEVELAND, OHIO

No.	Total square inch area of plate																																No.
	1	2	3	4	6	9	12	16	20	25	30	36	42	49	56	64	72	81	90	100	110	121	132	144	156	169	182	196	210	225	256	352	
11	22	24	25	27	30	35	39	45	51	60	67	76	85	96	107	119	132	145	159	174	190	207	224	242	261	280	300	322	343	369	424	597	11
12	27	28	30	33	37	42	48	55	62	72	82	93	104	117	130	145	160	177	194	213	232	252	273	295	320	342	367	393	419	450	519	729	12
13	51	54	58	63	70	81	91	105	119	138	156	177	198	224	249	277	306	338	371	406	443	481	522	564	607	653	700	751	800	859	989	1391	13
14	65	70	74	81	90	104	117	135	153	178	200	227	254	288	320	356	394	434	447	522	569	619	671	725	781	839	900	965	1028	1105	1271	1789	14
15	80	85	91	99	110	127	143	165	187	217	245	278	311	352	391	434	481	531	583	638	696	756	820	886	954	1026	1100	1180	1257	1350	1527	2186	15
16	22	24	25	27	30	35	39	45	51	60	67	76	85	96	107	119	132	145	159	174	190	207	224	242	261	280	300	322	343	369	424	597	16
17	95	101	108	117	130	150	169	195	221	257	290	329	368	416	462	514	569	628	689	754	823	894	969	1047	1128	1213	1300	1395	1486	1596	1837	2584	17
18	36	39	41	45	50	58	65	75	85	99	111	126	141	160	178	198	219	241	265	290	316	344	373	403	434	466	500	536	571	614	706	994	18
19	44	47	50	54	60	69	78	90	102	119	134	152	170	192	213	237	263	290	318	348	380	413	447	483	521	560	600	644	686	737	848	1193	19
20	58	62	66	72	80	92	104	120	136	158	178	202	226	256	284	316	350	386	424	464	506	550	596	644	694	746	800	858	914	982	1130	1590	20
21	36	39	41	45	50	58	65	75	85	99	111	126	141	160	178	198	219	241	265	290	316	344	373	403	434	466	500	536	571	614	706	994	21
22	44	47	50	54	60	69	78	90	102	119	134	152	170	192	213	237	263	290	318	348	380	413	447	483	521	560	600	644	686	737	848	1193	22
23	51	54	58	63	70	81	91	105	119	138	156	177	198	224	249	277	306	338	371	406	443	481	522	564	607	653	700	751	800	859	989	1391	23
24	58	62	66	72	80	92	104	120	136	158	178	202	226	256	284	316	350	386	424	464	506	550	596	644	694	746	800	858	914	982	1130	1590	24
25	15	16	17	18	20	23	26	30	34	40	45	51	57	64	71	79	88	97	106	116	127	138	149	161	174	187	200	215	229	246	283	398	25
26	17	18	19	20	23	27	29	34	38	45	51	58	64	72	81	90	99	113	119	131	143	155	168	182	196	211	225	242	258	277	319	448	26
27	51	54	58	63	70	81	91	105	119	138	156	177	198	224	249	277	306	338	371	406	443	481	522	564	607	653	700	751	800	859	989	1391	27
28	58	62	66	72	80	92	104	120	136	158	178	202	226	256	284	316	350	386	424	464	506	550	596	644	694	746	800	858	914	982	1130	1590	28
29	51	54	58	63	70	81	91	105	119	138	156	177	198	224	249	277	306	338	371	406	443	481	522	564	607	653	700	751	800	859	989	1391	29
30	66	70	75	81	90	104	117	135	153	178	201	228	255	288	320	356	394	435	477	522	570	619	671	725	781	840	900	966	1029	1105	1272	1789	30
31	30	30	30	30	32	34	38	42	46	50	60	70	80	90	100	112	126	134	146	156	172	184	196	210	222	238	246	258	268	278	292	326	31
32	60	60	60	60	64	68	76	84	92	100	120	140	160	180	200	224	252	268	292	312	344	368	392	420	444	476	492	516	536	556	584	652	32
33	23	23	23	23	23	23	23	23	23	23	23	26	32	38	43	49	55	62	69	76	85	93	101	110	119	130	139	150	162	172	198	270	33
34	46	46	46	46	46	46	46	46	46	46	46	52	64	76	86	98	110	124	138	152	170	186	202	220	238	260	278	300	324	344	396	540	34
35	26	26	26	26	26	26	30	37	45	54	64	75	86	99	112	127	142	159	175	194	213	234	254	276	299	323	348	373	400	428	486	665	35
36	33	33	33	33	33	33	37	47	56	68	80	93	107	124	140	159	177	199	220	243	266	292	318	345	374	404	435	467	500	535	607	831	36
37	42	42	42	42	42	42	47	59	70	85	100	117	134	155	175	199	222	249	275	304	333	365	398	432	468	505	544	584	625	669	759	1039	37
38	132	132	132	132	132	132	148	188	224	272	320	372	428	496	560	636	708	796	880	972	1064	1168	1272	1380	1496	1616	1740	1868	2000	2140	2428	3324	38
39	13	13	13	13	13	13	15	19	23	27	32	38	43	50	56	64	71	80	88	97	107	117	127	138	150	162	174	187	200	214	243	333	39
40	104	104	104	104	104	104	120	148	180	216	256	300	344	396	448	508	568	636	700	776	852	936	1016	1104	1196	1292	1392	1492	1600	1712	1944	2660	40
No.	1	2	3	4	6	9	12	16	20	25	30	36	42	49	56	64	72	81	90	100	110	121	132	144	156	169	182	196	210	225	256	352	No.
	Total square inch area of plate																																

1 Art and photography

2 Photo-engraving

3 Electrotypes, duplicate plates

Paper 4

Paper

Push tab down, fold on this crease then fold upward on other crease over edge of page and insert in slot.

5 Printing processes

6 Binding, mailing, etc.

7 Typography

8 Buyers' guide, index, etc.

Thumb-dex patent 2300623
Other patents pending

Paper

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Master paper selector

Basis size, standard weights, definitions, and data on use for each of 63 grades of printing papers facilitate selection of best sheet for any kind of job

Compiled by the editors

In compiling the Master Paper Selector on the following pages, the attempt has been made to present a clear, concise description of the many common paper grades and how they are most often used in the graphic arts.

The uses listed for the papers in the Master Paper Selector are by no means the only ones for which they are available. They are simply those for which a given paper has been designed and for which it could be used without the slightest hesitation. A great many of the grades listed are used successfully for other purposes than the standard one.

Whenever it is intended so to use a paper, it would be wise to consult all persons concerned with the production of the printed piece—the printer, paper maker, binder, mounter, etc.—to be sure that it will be suitable to all phases in the production of the given job.

A message without illustrations may be printed most effectively on antique paper, designed to enrich the appearance of the types used. A message that needs to be supported with pictures can be printed with best effect on glossy or dull coated paper; the nature and importance of the pictures should indicate the choice.

Printing papers other than antique and coated are made necessary by circumstances that may require a sacrifice in the clarity of pictures or of type to obtain savings in mailing weight, special bulks, or some other specific functional consideration. Such papers are, in a sense, compromises that subtract from the crispness of the print or type so that other practical requirements may be met.

When ordering paper, it is necessary to give certain basic information to be certain of receiving exactly the kind of paper wanted. The order should indicate desired quantity, color, finish, size, weight, and brand name. For example: 12 reams, white, wove, 17 x 22-20, (brand name). To order paper intelligently, the user should know the meaning of such terms as basic weight, equivalent weight, and basic size, and how to find the various equivalent weights.

The basic weight is the weight of one ream (usually 500 sheets) of the basic size. Different kinds of paper have different basic sizes, as indicated in the Master Paper Selector. The basic size is essentially one of the standard sizes in which the sheet is made that has been selected as the basis for the determination of the basis weights. On Page 202 are tables giving the basis and equivalent weights of book and job papers in standard sizes in which they are made.

Should it be necessary to calculate the equivalent weight (weight of one ream of a size larger or smaller than the basic size) use this formula:

$$\frac{\text{Sheet area of desired size} \times \text{Basic weight}}{\text{Sheet area of basic size}} = \text{Equivalent weight}$$

For example: What is the ream weight of an 80-pound coated book paper, 35 x 45"? Filling in the known data:

$$\frac{1575 \times 80}{950} = ?$$

Solving out the equation, it will be found that 500 sheets of 35 x 45-80 weigh 133 pounds, or 266M.

To find the weight of an odd number of sheets, this formula can be used:

$$\frac{\text{Weight per M} \times \text{No. of sheets}}{1{,}000} = \text{Total weight}$$

For example: The weight of 1,350 sheets of 35 x 45", basis 80. The ream weight, which can be obtained from the equivalent weight data on Page 202 or can be derived as shown, is 133. Therefore:

$$\frac{266 \times 1350}{1{,}000} = 359.1 \text{ lbs.}$$

Because the different kinds of paper use different basic sizes from which to determine the basic weights, the weight of one kind of paper may not be the same as the weight of another. A 13-pound bond, for example, is based on a 17 x 22" size and is equivalent in weight to an 18-pound cover, based on 20 x 26", or a 33-pound book, based on 25x38 .

Equivalent weights table is based on ream weights. Basic sizes and weights are in bold. All weights in any one horizontal line in table that is presented below are equivalent to each other.

Bond 17x22	Cover 20x26	Book 25x26	Bristol 22½x28½
13	18	33	22
16	22	41	27
20	28	51	34
24	33	61	41
28	39	71	48
32	45	81	55
36	50	91	62
40	56	102	69
44	61	112	75
18	**25**	46	31
25	**35**	64	43
29	**40**	73	49
36	**50**	91	62
43	**60**	110	74
47	**65**	119	80
58	**80**	146	99
65	**90**	164	111
12	16	**30**	20
16	21	**40**	27
18	24	**45**	30
20	27	**50**	34
24	32	**60**	40
28	38	**70**	47
31	43	**80**	54
35	48	**90**	60
39	54	**100**	67
47	65	**120**	80
59	80	**150**	100
58	81	148	**100**
70	97	176	**120**
82	114	207	**140**
93	130	237	**160**
105	146	267	**180**
117	162	296	**200**
53	74	135	**91**
67	93	170	**115**
82	114	207	**140**
105	146	267	**180**

Master paper selector, continued

Grade	Description	Printing conditions
Book, antique, wove, laid Basis size: **25x38, 500 sheets** Standard weights: **30, 35, 40, 45, 50, 60, 70, 80, 100 lbs.**	A paper with a rough eggshell finish but bulkier. It is run with light pressure and little calendering to give greater bulk. If laid, paper has a ribbed appearance produced by a dandy roll on paper machine. Wire marks are prominent in wove.	Popular in white and natural tones for book publishing. Usually line cuts and type are used. Screen 65-line.
Book, bulking antique	Used when maximum bulk per unit of ream weight is desired. Usually made to definite specifications of problems involved. There is little or no loading.	Generally used in book publishing where bulk is predominant requirement.
Book, dull finish Basis size: **25x38, 500 sheets** Standard weights: **37, 46, 50, 60, 70, 80, 90, 120 lbs.**	A finish low in gloss, referring mostly to papers coated with low gloss pigments and specifically to any coated box paper with a glare test less than 55%, as distinguished from semi-dull finish, which covers field between dull and glossy. For semi-dull coateds, coating materials are applied on base papers mechanically and so finished to flatten or smooth the surface to give minimum gloss or glare.	The printed result on dull finish papers is softer and less detailed in the halftones than glossy coated paper. Screen up to 150-line.
Book, eggshell Basis size: **25x38, 500 sheets** Standard weights: **30, 35, 40, 45, 50, 60, 70, 80, 100 lbs.**	A relatively rough finish so called because its texture resembles an eggshell. Bulk is more than a machine finish paper but not much as antique paper.	Used in commercial printing and book publishing where type and line cuts are involved. White, ivory, general colors. Screen 65-line.
Book, English finish Basis size: **25x38, 500 sheets** Standard weights: **30, 35, 40, 45, 50, 60, 70, 80, 100 lbs.**	An uncoated, plain paper with a finish between that of machine and supercalendered paper.	Widely used in magazines and in book publishing. Screen up to 110-line.
Book, glossy coated Basis size: **25x38, 500 sheets** Standard weights: **37, 46, 50, 60, 70, 80, 90, 100, 120 lbs.**	Coating materials and adhesives are applied mechanically in liquid form on base paper. After drying, paper is calendered to give it high receptive printing surface. As a rule, the base paper is strong, but sometimes it is made with extra strength for special problems. Cast coated is term applied to process in which coated paper is pressed against a solid surface while coating is in highly plastic condition. When dry, finish is similar to the contacted surface. If solid surface is glossy, coated paper surface will be glossy.	Because glossy coated paper has brighter color, greater opacity, and better printing surface than other papers, it is used primarily for magazines, booklets, and folders where fine halftone illustrations are necessary. White and ivory are most common colors, but others are available. Screen up to 200-line.
Book, duplex coated	Glossy coated paper of which one side is coated in one color and the other in a second color.	Printing requirements are similar to those of glossy coated paper, with the different colors contributing a wood effect. Screen up to 150-line.
Book, coated with toned design	Glossy coated paper that has been converted to give a deliberate design in the paper.	Similar to glossy coated paper (see above).
Book, litho coated Basis size: **25x38, 500 sheets** Standard weights: **50, 60, 70, 80 lbs.**	A paper coated on one or two sides with material designed to withstand the water used in lithographic process. Made in wide range of basic weights. A good pick strength is essential.	Coated one-side paper is adapted primarily for use where uncoated side is to be pasted: labels, window displays, and boxes. Used in both letterpress and lithographic processes. Coated two-side paper often is used in letterpress where large areas of glossy ink might serve decorative or functional purpose.
Book, machine finish Basis size: **25x38, 500 sheets** Standard weights: **30, 35, 40, 45, 50, 60, 70, 80, 100 lbs.**	Uncoated plain paper with a little lower finish than English finish and yet not as rough as eggshell.	Widely used in magazine and book publishing. Approximates printing on English finish. Screen 100-line.
Book, offset Basis size: **25x38, 500 sheets** Standard weights: **50, 60, 70, 80, 100, 120, 150 lbs.**	A book paper, coated or uncoated, that must be processed to eliminate as far as possible distortion from stretching, shrinking, or curl. The finish of the uncoated ranges from antique or eggshell to English.	Used principally in offset lithography. Coated two-sides used in letterpress for high-gloss ink printing. Strong fibered, better grades are surface sized.

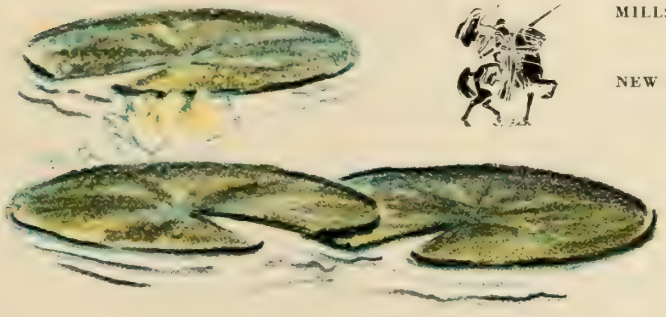


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Master paper selector, continued

Grade	Description	Printing conditions
Book, offset in fancy finishes	Uncoated offset book paper that has been mechanically embossed with a special finish.	Same as uncoated offset paper, white and some tints in color.
Book, paper-machine coated Basis size: **25x38, 500 sheets** Standard weights: **50, 60, 70, 80 lbs.**	Coated with a pigment on a coating device that is part of the paper machine.	Used chiefly in magazines and low-cost advertising folders and booklets. Screen up to 120-line.
Book, plate finish rag Basis size: **25x38, 500 sheets**	Rag content book paper that has been put through a plater or supercalendering machine to give a smooth or polished surface. Finish can vary due to type of process or pressure	Will take a somewhat finer screen than average rag book paper; 100-line screen; special making in white and shade.
Book, rag content Basis size: **25x38, 500 sheets**	A term applied to a wide range of book papers having rag as an ingredient, such as 100% rag, 50% rag, etc.	Used for high-grade books and advertising material where quality and longevity are important. Generally letterpress, line cuts, and type.
Book, supercalendered Basis size: **25x38, 500 sheets** Standard weights: **30, 35, 40, 45, 50, 60, 70, 80, 100 lbs.**	A finish given machine paper by passing it through rolls of a supercalendering machine under pressure.	Because of smoothness created by this operation, paper has a better printing surface than English finish, but has lost some of its bulk and opacity. Prints better than English finish, but usually not as well as coated paper. Used extensively in magazines and low-cost advertising booklets and folders. Screen 120-line.
Book, text papers Basis size: **25x38, 500 sheets**	A term applied to grades of printing papers specifically for use in books. Finish always is a rough eggshell or antique.	Primarily suited to type and line cuts.
Bible, thin, flax, or India Basis size: **25x38, 500 sheets** Standard weights: **17¼, 20, 24, 30, 40 lbs.**	Lightweight opaque printing paper of small bulk. Significant properties are permanence, strength, and opacity, the last being very important.	Principally used in books, Bibles, encyclopedias, and sales manuals where bulk is important. Excellent for offset. Screen 110-line.
Lightweight catalog Basis size: **24x36, 500 sheets** Standard weights: **22½, 25, 28 lbs.**	A lightweight paper with machine or English finish, sometimes coated, usually manufactured with substantial proportions of mechanical pulp.	Chief uses are for large-run mail order, seed, premium, and other catalogs, and telephones and other directory types where weight is important because of postage and delivery costs.
Cover Basis size: **20x26, 500 sheets** Standard weights: **Light: 25, 35, 40, 50 lbs.** **Medium: 50, 65 lbs.** **Heavy: 65, 80, 90, 100, 130 lbs.**	A general term applied to a great variety of papers normally used for outside covers of catalogs, magazines, and booklets in which it is desired that the covers contribute some decorative quality. Cover papers range in quality from chemical wood pulp to rag pulp, with mixtures of the two. A few grades contain some mechanical pulp.	Printing of cover stocks varies with the surface, contrasting from fine glossy coated surfaces suitable for 150-line halftones to rough and fancy finish covers suitable only for type and line cuts. Lightweight covers are used for box covers. The medium weights may even be pasted 2-ply. This weight is most popular because generally the essential features of folding, permanency, printing surface, and high resistance to handling and abrasion are present. The heavier weights also are furnished in a wide variety of colors, surface finishes, and decorations. Some cover stocks are surface-sized for offset lithography.
Cover, glossy coated Basis size and standard weights: same as Cover	See definition of Cover above. This paper has glossy surface similar to glossy coated book paper.	Suitable for fine halftones, for covers of catalogs, etc. Adaptable for laminating, lacquering, and varnishing.
Cover, dull coated Basis size and standard weights: same as Cover	Same definition as Cover except that surface is treated similar to dull coated book.	Suitable for letterpress printing with halftones up to 133-line.
Cover, duplex coated Basis size and standard weights: same as Cover	Similar definition as Cover except that two different colored coatings are used, one on each side.	Similar to printing quality of glossy coated cover.
Cover, rag content Basis size and standard weights: same as Cover	Similar definition as Cover, with furnish made up of 25% to 100% rag. Surface without any special finish would be an antique surface; however, many are specially embossed.	Type and line cuts.

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Master paper selector, continued

Grade	Description	Printing conditions
Cover, handmade Basis size and standard weights: same as Cover	Each sheet is made individually with deckle all around. Materials used generally are rag.	Limited primarily to type and line cuts.
Cover, metallic Basis size and standard weights: same as Cover	A pigment composed of metal flakes such as aluminum or bronze powder is adhered to regular cover paper by either casein or lacquer.	Similar to general printing conditions on metallic papers; use should be discussed with the printer.
Newsprint Basis size: **24x36, 500 sheets** Standard weights: **28½ to 35 lbs.**	A generic term describing paper generally used in publication of newspapers. The furnish is largely mechanical wood pulp, with some mechanical pulp.	Because it generally is machine finished and slack-sized, with little or no mineral loadings, printing limitations are those commonly associated with newspaper printing; namely, 65- and 85-line screens.
Halftone news Basis size and standard weights: same as Newsprint	A term used to describe groundwood book paper with hard, smooth, machine-finished surface.	Contains more mineral filler than regular newsprint; takes halftones up to 100-line screen.
Novel news Basis size and standard weights: same as Newsprint	A sheet approximating newsprint quality, made with rough surface to give bulk.	Primarily used in so-called pulps; that is, thrillers, detective, and adventure magazines.
Rotogravure Basis size: **25x38, 500 sheets** Standard weights: **40 to 90 lbs.**	Outstanding characteristic is the highest possible finish, although English finish rotogravure papers have been developed on a large scale for magazines. The common quality of rotogravure paper is groundwood; however, range goes to paper having no mechanical pulp.	Most common usage is in supplements of Sunday magazines and Sunday newspapers. Also important in long-run catalog and magazine editions.
Poster Basis size: **24x36, 500 sheets** Standard weights: **32 to 45 lbs.**	Special mechanical pulp-printing paper that is mixed with a certain amount of unbleached pulp	Major use is for flyers, throw-aways, and similar inexpensive advertising pieces; also for cheap salesbooks and order forms. It is available in six standard colors.
Postcard Basis size: **22½x28½, 500 sheets** Standard weights: **94, 100, 105 lbs.**	Postcard paper generally used for advertising comes in two types and is approximately 9/1000 inch in thickness.	Writing type has smooth, even, firm surface suitable for both pen and pencil and for ordinary printing; printing classification, of better quality, either coated or plain, serves as souvenir or message carrier.
Postcard, glossy coated Basis size and standard weights: same as Postcard	Postcard stock that has been coated and calendered similar to glossy coated book paper.	Similar to printing conditions of glossy coated book paper. Screen 150-line.
Postcard, dull coated Basis size and standard weights: same as Postcard	Postcard stock treated similarly to dull coated book.	Used where soft, halftone effect is desired, as on dull coated book paper. Screen 133-line.
Cardboard, duplex coated Basis size and standard weights: same as Postcard	Cardboard is a general term applying to papers 6/1000 inch in thickness where stiffness is a paramount characteristic. In duplex coated cardboard, like duplex coated cover, there are two colored coatings, one on each side.	Similar to glossy coated cover.
Bristols, index Basis size: **25½x30½, 500 sheets** Standard weights: **90, 110, 140, 170, 200 lbs.**	A well sized type of cardboard made on Fourdrinier machine, from 6/1000 inch thickness or higher, so manufactured as to lie flat, eliminating splitting. Made in a number of colors.	Generally type and line cuts are used, although some smooth bristols are suitable for 100-line screen. Used for card indexes, printed forms, records, etc.
Bristols, mill Basis size: **22½x28½, 500 sheets** Standard weights: **90, 100, 120, 140, 160, 180, 200 lbs.**	Uncoated bristol, with rough or smooth finish, generally manufactured on cylinder machine. Available in variety of colors, it has greater stiffness than index bristol.	Used for greeting cards, programs, menus, coin cards, tickets, price tags, etc.

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Master paper selector, continued

Grade	Description	Printing conditions
Bristols, wedding Basis size **22½x28½, 500 sheets** Standard weights **100, 120, 180 lbs.**	Particularly fine quality that will take copper or steel engraving as well as offset or letterpress. Normally produced by pasting together several sheets of vellum or smooth wedding paper.	Used for wedding and other high-quality announcements, greeting cards, etchings, visiting cards, etc
Papeteries Basis size: **17x22, 500 sheets** Standard weights: **16, 20, 24, 28, 32 lbs.**	A class of writing paper made from rag or chemical woodpulp or mixtures of these. Paper receives many special treatments, such as embossing, mottling, watermarking, aniline printing, etc	Normally cut to size, boxed, and used for correspondence; the various special treatments give striking colors and appearance.
Cardboard, antique finish	A cardboard that has received a deliberate antique finish.	Limited primarily to type and line cuts.
Cardboard, vellum or plate finish	Cardboard stock that has received the vellum or eggshell type of surface or the plate–smooth–finish.	Vellum is suited primarily to type and line cuts, while plate finish board should give suitable printing up to 100-line screen.
Cardboard, translucent	A soft pasted or nonpasted cardboard made of soda pulp, with both sides clay coated.	Used for booklet covers, window hangars, window cards will take up to 133-line halftones.
Cardboard, metallic	Board bearing a metallic coating.	Should be discussed with the printer.
Blanks Basis size: **22x28** Standard thicknesses: **.012" to .056"**	A group of thick cardboards that may be coated or uncoated, pasted or unpasted, and made in thicknesses from 12/1000 to 78/1000 of an inch with a white or colored liner, the middle being of different stock than that of the liner. Blanks generally are made to provide maximum stiffness and smoothness of surface.	Used for various purposes where stiffness combined with printing qualities are required, such as calendar backs, street car signs, window displays, etc.
Boxboard Basis size: **25x40, 500 sheets**	The board used for fabricating boxes; may be of wood pulp, straw, waste papers, or any combination of these.	Generally shipped in sheets; the printing conditions obviously would be determined by the type of surface used.
Railroad board Basis size: **22x28, 500 sheets** Standard thicknesses: **.018" to .024"**	Clay coated white-lined card middles, the coating raw stock being made on a cylinder machine. The coating generally is applied to both sides and tinted to give a variety of colors. Usually waterproof.	Generally used for mailing cards, show cards, tickets, checks, tags, and car signs. It also is known as car sign board, colored ticket stock, and colored railroad ticket.
Tough check Standard thicknesses: **3, 4, 6, 8 ply**	Very strong cardboard made on cylinder machine from extra strong unbleached sulphite or sulphate pulp; may be coated on one or both sides; a number of colors available.	Used primarily for tickets, shipping tags, and in any instances where toughness is the most essential quality.
Blotting Basis size: **19x24, 500 sheets** Standard weights: **60, 80, 100, 120, 140 lbs.**	Unsized paper generally made from rags, cotton linters, chemical or mechanical wood pulp, or a mixture of these. Porous, bulky, low finish, possesses little strength.	Some grades are made with a smooth, machine finish that makes them suitable for printing coarse screen halftones.
Blotting, enamel Basis size: **19x24, 500 sheets** Standard weights: **100, 120, 140 lbs.**	Coated one-side book paper; usually of high finish, that is laminated to the blotting paper to give a fine surface for halftones and color printing.	Blotting paper may be embossed and used for desk blotters. Properly handled, the printing conditions are similar to glossy coated book paper.
Blotting, metallic Basis size: **19x24, 500 sheets** Standard weights: **100, 120, 140 lbs.**	Coated one-side metallic paper laminated to blotting paper.	Similar to handling of all metallic papers; should be discussed with printer.
Bond Basis size: **17x22, 500 sheets** Standard weights: **11, 13, 16, 20, 24, 28 lbs.**	A grade of writing or printing paper originally used where strength, durability, and permanence are essential.	Although typically a writing paper whose use has been greatly extended into business letterheads and forms, it has good printing qualities as well. Most of it is subject to letterpress, lithography, or steel-die engraving. However, the writing qualities of cleanliness, formation, color, and erasing predominate.



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Master paper selector, continued

Grade	Description	Printing conditions
Bond, rag content Basis size: **17x22, 500 sheets** Standard weights: **9, 13, 16, 20, 24 lbs.**	Quality is obtained through use of rag pulp, bleached chemical wood pulps, or mixtures of these fibers in the manufacturing process.	
Bond, coated one side Basis size and standard weights: same as Rag Content Bond	See Bond definition above; this paper contains 25% to 100% rag fibers. Rag or sulphite content bond with clay coating on one side.	For illustrated letters and folders where halftones are desired on one side and normal bond paper printing on the reverse.
Bond, sulphite Basis size and standard weights: same as Rag Content Bond	See Bond definition above; but this paper is made with bleached chemical wood pulps.	
Ledger Basis size: **17x22, 500 sheets** Standard weights: **24, 28, 32, 36, 40, 44 lbs.**	Originally used for writing, and especially pen-and-ink records. Commonly made from rag pulp or bleached chemical wood pulp, or a mixture of these. Usually, but not always, supercalendered. A good surface for ruling is important.	Used primarily where strength, durability, and permanence, as well as printing quality, are essential.
Ledger, rag content Basis size and standard weights: same as Ledger	See Ledger above; this paper contains 25% to 100% rag fibers.	Similar to printing conditions of bond paper.
Ledger, sulphite Basis size and standard weights: same as Ledger	Ledger paper made with bleached chemical wood fibers.	Because it is subjected to considerable wear, it requires a high degree of durability and permanence. Prime properties are strength, tearing resistance, erasibility, uniform ruling surface. Generally printed letterpress and ruled as a form.
Onion skin, rag, or sulphite Basis size: **17x22, 500 sheets** Standard weights: **7 to 10 lbs.**	Lightweight, durable bond type paper; thin, usually quite transparent; so named because surface resembles dry outer skin of an onion. It is a typical manifold paper.	Used for duplicate copies of typewritten material, for interleaving order books, for permanent records where small space is required, and for air mail correspondence.
Writings, vellum or plate finish Basis size: **17x22, 500 sheets** Standard weights: **13, 16, 20, 24 lbs.**	Paper suitable for pen-and-ink, typewriting, and printing, made in a wide range of qualities from chemical, mechanical wood pulps, and rag pulps, or mixtures of these. Smooth plate finish is put on paper after manufacture. Vellum finish is similar to, but of slightly finer grain than, eggshell, and by special felts on the paper machine.	Since most significant property is good writing and ruling surface, as well as good strength and erasibility, this paper generally is used where fine bond and writings adapt themselves.
Handmade	Paper made in molds by hand in single sheets having rough or deckle edge on all four sides. Surface would be antiqued in finish.	Generally used for very limited editions, primarily type and line cuts.
Metallic, coated one side	Coated one-side paper on which pigment content of metallic flakes such as aluminum or bronze has been placed by use of casein or a lacquer.	Similar to handling of all metallic papers; should be discussed with the printer.
Glazed	Paper with a high gloss or polish that is applied to surface either during or after manufacture by such methods as friction calendar, plater, or Yankee drier.	Used primarily in connection with bond, book boards, or box covers.
Gummed Basis size: **25x38** Standard weights: **45, 50, 55, 60, 70, 80 lbs.**	General name for any paper coated on one side with an adhesive gum. Available as coated or uncoated book, in white or in colors.	Various type gummed papers are used for stickers, labels, seals, stamps, splices, tapes, etc. Generally lie flat without curling, and adhere firmly to the surface.
Glassine, glazed Basis size: **24x36, 500 sheets** Standard weights: **15 to 50 lbs.**	Smooth, dense, transparent or semi-transparent paper, manufactured primarily from wood pulps that have been beaten to obtain a high degree of hydration of the paper stock. This paper is greaseproof, and when waxed or lacquered is practically impervious to air and vapors. Made in white and various colors.	Used for preservation of foods, tobacco, chemicals, and other perishables, and in the manufacture of bags, envelopes, and windows for window envelopes.

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ST. PAUL, MINN.	The John Leslie Paper Company
	Newhouse Paper Company
SALT LAKE CITY, UTAH	Zellerbach Paper Company
SAN DIEGO, CAL.	Zellerbach Paper Company
SAN FRANCISCO, CAL.	Zellerbach Paper Company
SAN JOSE, CAL.	Zellerbach Paper Company
SEATTLE, WASH.	Zellerbach Paper Company
SHREVEPORT, LA.	Louisiana Paper Company, Ltd.
SPOKANE, WASH.	Zellerbach Paper Company
SPRINGFIELD, MASS.	The Paper House of New England
STOCKTON, CAL.	Zellerbach Paper Company
TOPEKA, KAN.	Midwestern Paper Company
TROY, N. Y.	Troy Paper Corporation
TULSA, OKLA.	Tulsa Paper Company
WACO, TEXAS	Olmsted-Kirk Company
WALLA WALLA, WASH.	Zellerbach Paper Company
WASHINGTON, D. C.	Stanford Paper Company
YAKIMA, WASH.	Zellerbach Paper Company

★

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NEW YORK CITY (Export) . National Paper & Type Co.
Agencies or Branches in 40 cities in Latin America and West Indies.

NEW YORK CITY (Export) Muller and Phipps (Asia) Ltd.
Agencies in Belgian Congo, Burma, Ceylon, China, Hong Kong, Iceland, India, Malaya, Philippine Islands, South Africa.

AUSTRALIA . . . . . B. J. Ball Limited

NEW ZEALAND . . . . . B. J. Ball (N. Z.), Ltd.

HAWAIIAN ISLANDS . . . Honolulu Paper Company, Ltd.
Agents for Zellerbach Paper Company

WARREN'S STANDARD PRINTING PAPERS

BETTER PAPER — Warren's (STANDARD) Printing Papers — BETTER PRINTING

S. D. Warren Company manufactures a variety of grades of papers for the different classes of use listed herewith.

Warren's STANDARD PRINTING PAPERS—

For use in commercial printing, advertising, and in magazines

COATED	UNCOATED
Warren's Lustro Gloss	Warren's Olde Style — Antique Wove
Warren's Cumberland Gloss	Warren's Olde Style — Antique Laid
Warren's New England Gloss	Warren's Cumberland English Finish & Super
Warren's Westbrook Gloss	Warren's Cumberland Offset (Pre-conditioned)
Warren's Lustro Dull	Warren's Thintext (India Paper)
Warren's Cumberland Dull	Warren's Bibliopake
Warren's Offset Enamel	Warren's Gravure Super
Warren's Overprint Label C1S	
Warren's Multi-Service Label C1S	
Warren's Lustro Gloss Cover	
Warren's Cumberland Gloss Cover	
Warren's Cumberland Gloss Bristol	
Warren's New England Gloss Bristol	
Warren's Cumberland Dull Post Card	

Warren's STANDARD BOOK PUBLISHING PAPERS—

For school books and trade books

Warren's "1854"	Warren's Publishers' Super
Warren's No. 66 Antique (Bulking)	Warren's Publishers' English Finish
Warren's Novel Antique	Warren's Publishers' Eggshell
	Warren's Publishers' Offset

Warren's THIN PAPERS—

Warren's Thintext (India Paper)
Warren's Thinweave (Manifold)
Warren's Fineleaf (Makeready Tissue)
Warren's Carbonizing Papers

Warren's BOX COVER PAPERS—

Warren's Cumberland Plate
Warren's Lusterpak
Warren's Foilkote
Warren's Foiltone
Warren's Foilchrome

Warren's BASE PAPERS FOR CONVERTORS

S. D. Warren Company manufactures a variety of base papers for conversion into grease-proof, water-vapor-proof packaging papers; into impregnating and laminating papers; and into decorative papers.

SAMPLE SHEETS, DUMMIES AND COMPLETE INFORMATION ABOUT THESE PAPERS may be obtained readily from any one of the fine paper merchants listed on the opposite page

Standard sizes and weights

Ream weights for standard sizes of book, bond, ledger, writing, cover papers; handy formula to aid in determining the weights of odd size sheets

Donald Wilson

This chart lists the weights per 500 sheets of standard sizes of four main classes of book papers, and bond, writing, ledger, and cover papers. Antique and machine finish papers are available in 30 to 100 pound basic weights; coated papers in 37 to 120 pound; litho (coated one side) in 50 to 80 pound; offset book in 50 to 150 pound; cover in 25 to 100 pound; and bond, writing, and ledger in 13 to 44 pound.

Of the 25 standard sizes listed below, antique and machine finish papers are available in 11 sizes; coated papers in 10, lithos (coated) in 10, offsets in 11, covers in 4, and bonds, writings, and ledgers in 7.

To simplify calculation of total weight of paper required on a job, it is advisable to multiply the ream weight by 2, to give the weight per 1,000 sheets of the particular size.

Then the decimal system of calculation can be used: e.g.—770 sheets of 35x45 uncoated book paper in a 70-pound basis weight per 500 sheets is shown in the table to be 116 pounds. Multiply by 2—232 pounds per 1,000 sheets, then multiply by .77, giving 178.64 pounds as weight of the required amount of paper for the job.

The basic size for book paper is 25x38 inches. It is upon the basic size in a ream (500 sheet) quantity that all basic weights are calculated. Basic weights are shown in bold face type in the six tables below. Thus, a "70 pound basis weight book paper" means that 500 sheets of it cut to a sheet size of 25x38 would weigh 70 pounds. The basic size for cover papers is 20x26; for bonds, writings, and ledgers 17x22.

The 500-sheet weights of sizes other than the basic size vary, of course, in proportion to area. Use the following formula to determine the weight ("X") of 500 sheets of paper of any special size that is not listed in the tables below:

Square inch area of special size sheet: 950 = "X": basic weight. Solve for "X". (950 is the square inch area of 25x38).

For example: "What is the ream weight of paper 25x40 in size, of 50 pound basic weight?" Multiply 25x40 = 1,000 square inches. 1,000 : 950 = "X" : 50. Thus: 950"X" = 50.000. "X" = 52.63 pounds.

Table of square inch areas

17x22 = 374	28x44 = 1232
17x28 = 476	30½x41 = 1250.5
19x24 = 456	32x44 = 1408
20x26 = 520	33x44 = 1452
22x34 = 748	34x44 = 1496
22½x35 = 787.5	35x45 = 1575
23x35 = 805	35x46 = 1610
24x36 = 864	36x48 = 1728
24x38 = 912	38x50 = 1900
25x38 = 950	38x52 = 1976
26x40 = 1040	41x54 = 2214
28x34 = 952	44x64 = 2816
28x42 = 1176	

Uncoated: antique, eggshell, e.f., m.f., super

22½x35	25	29	33	37½	41½	49½	58	66½	83
24x36	27	32	36	41	45	55	64	73	91
25x38	**30**	**35**	**40**	**45**	**50**	**60**	**70**	**80**	**100**
28x42	37	43	50	56	62	74	87	99	124
28x44	39	45	52	58	65	78	91	104	130
30½x41	39	46	53	59	66	79	92	105	132
32x44	44	52	59	67	74	89	104	119	148
33x44	46	53	61	69	76	92	107	122	153
35x45	50	58	66	75	83	99	116	133	166
36x48	54	64	72	82	90	110	128	146	182
38x50	60	70	80	90	100	120	140	160	200

Offset: regular and special finishes

22½x35	41½	49½	58	66½	83	99½	124½
25x38	**50**	**60**	**70**	**80**	**100**	**120**	**150**
28x42	62	74	87	99	124	149	186
28x44	65	78	91	104	130	156	195
32x44	74	89	104	119	148	178	222
35x45	83	99	116	133	166	199	249
36x48	90	110	128	146	182	218	272
38x50	100	120	140	160	200	240	300
38x52	104	125	146	166	208	250	312
41x54	117	140	163	186	233	280	350
44x64	148	178	208	238	296	356	444

Cover

20x26	**25**	**35**	**40**	**50**	**65**	**80**	**90**	**100**
23x35	38½	54	62	77½	100½	124	139½	155
26x40	50	70	80	100	130	160	180	200
35x46	77	108	124	155	201	248	279	309½

Coated: glossy and dull

22½x35	30½	38	41½	49½	58	66½	74½	83	99½
24x36	34	42	45	55	64	73	82	91	109
25x38	**37**	**46**	**50**	**60**	**70**	**80**	**90**	**100**	**120**
26x40	41	50	55	66	77	88	99	109	131
28x42	46	57	62	74	87	99	111	124	149
28x44	48	60	65	78	91	104	117	130	156
32x44	55	68	74	89	104	119	133	148	178
35x45	61	76	83	99	116	133	149	166	199
36x48	68	84	90	110	128	146	164	182	218
38x50	74	92	100	120	140	160	180	200	240

Coated one side: litho and label

20x26	27½	33	38½	44
25x38	**50**	**60**	**70**	**80**
26x40	55	66	77	88
28x42	62	74	87	99
28x44	65	78	91	104
32x44	74	89	104	119
34x45	83	99	116	133
36x48	90	110	128	146
38x50	100	120	140	160
41x54	117	140	163	186

Bond, writing and ledger

17x22	**13**	**16**	**20**	**24**	**28**	**32**	**36**	**40**	**44**
17x28	16½	20½	25½	30½	35½	40½	46	51	56
19x24	16	19½	24½	29½	34	39	44	49	53½
22x34	26	32	40	48	56	64	72	80	88
24x38	32	39	49	59	68	78	88	98	107
28x34	33	41	51	61	71	81	92	102	112
34x44	52	64	80	96	112	128	144	160	176

MEAD papers

ESTABLISHED 1846

Paper Makers to America

Experienced paper buyers know that the surest way to get satisfactory paper is to use the product of mills of established reputation.

The Mead Corporation, and its Dill & Collins and Wheelwright Divisions, all have long and honorable records in the manufacture of fine papers. You can buy the products of these mills with confidence.

Mead offers a completely diversified line of papers in colors, substances, and surfaces for every printed use, including such famous grades as Mead Bond; Moist-rite Bond and Offset; Process Plate; Wheelwright Bristols and Indexes; Dill & Collins Black & White; Printflex and Canterbury Text.

THE MEAD CORPORATION

Mead ⋆ Dill & Collins ⋆ Wheelwright

Sales Offices: THE MEAD SALES COMPANY, 230 Park Avenue, New York City 17

New York Chicago Philadelphia Dayton Boston Leominster

Using standard sizes

For most printing jobs, efficient production can be accomplished by using standard sizes of paper; twelve ideal page sizes are recommended

Stanley Hobart

Make job to fit the paper, not the paper to fit the job. That makes for efficient production in a great majority of printed pieces. Use of standard paper sizes has long been preached and an analysis of its reasons for being—its benefits to the paper maker, the printer, and to the buyer—is in order.

Standard sizes is a term loosely used to imply that the majority of jobs to be printed can be most efficiently produced from four standard sheet sizes stocked by all mills in a variety of weights, finishes, etc. It is as important to know when not to use, as well as when to use, these stock sizes for a given job.

No formula can be satisfactorily established to determine this, and the buyer of the paper and printing will do well to consult the printer, while the job is in the planning stage, to determine whether it can be and should be so organized as to take advantage of the economies inherent through using 25x38, 28x44, 32x44, or 35x45 size sheets.

Gang work

Frequently it is possible to organize a whole campaign of folders, broadsides, stuffers, booklets for dealers, consumers, etc., and to gang some or all of these up into one order.

The illustration on Page 205 shows how 10 jobs can be printed simultaneously out of one sheet of 38x50 (double 25x38) and how each of these jobs can be folded and trimmed so as to make 10 distinct brochures, folders, etc., no two being alike in both size and shape nor in fold.

The diagram on Page 205 also shows where the various jobs cut from the large sheet, and the dotted lines indicate the folds employed on each job.

Actual sizes of the jobs as cut out of sheet and page sizes of each after folding, trimming, etc., are as follows:

	Cut from sheet	Largest Page size	Standard Envelope
A.	19x12½ (broadside	8⅝x5⅜	5¾x9
B.	9½x12½ (folder)	5⅜x4¼	4½x5⅞
C.	9½x12½ (folder)	3¾x5⅛	4 x5⅝
D.	19x12½ (broadside)	9⅛x4	4¼x9⅝
E.	19x12½ (booklet, saddle wire stitched, 8 pages)	9 x6	6¼x9⅝
F.	9½x12½ (folder)	5¼x7⅝	5½x8⅛
G.	9½x12½ (folder)	6 x4½	4¾x6½
H.	9½x12½ (booklet, saddle wire stitched, 8 pages)	4½x6	4¾x6½
I.	19x25 (booklet) saddle wire stitched, 16 pages)	9⅛x6	6¼x9⅝
J.	9½x12½ (envelope enclosure)	6¼x3⅛	3¾x6¾

Paper, printing economies

The advantages of ganging up work in this manner are apparent. Press work is combined and so is the paper order, resulting in economies on both scores. It will be noticed that these jobs cut from the 38x50 sheet with a minimum of waste and that every one is designed to fit a standard envelope size.

Of course it is not always possible to gang up jobs in this way—they cannot always be planned ahead so as to be printed together, and occasionally when this is possible they may require a different color or kind of stock.

But when a firm or an agency is having a great deal of printing done, it is frequently possible to plan and co-ordinate the work as to get efficient results. The example used here is not typical. It is almost an ideal set-up. But it is used to show just how far standardization can be carried and to illustrate that by standardizing, one does not in any way put reins on the artist.

The different kinds of jobs cut and folded out of same size sheets (six from 9½x12½, three from 19x12½, and one from 19x25) all taken from one standard size sheet (38x50) are just an indication of the variables that the intelligent designer can manipulate to obtain novel and striking effects while at the same time ordering and using the paper with maximum efficiency.

The artist usually has a wide variety of paper grades available; he can carefully select papers of varying colors and shades, of a great number of finishes, a choice of weights, and even though limited to four sheet sizes he has, as the accompanying diagram shows, a large and varied number of formats from which to choose.

After all, an advertising piece is not art for art's sake. It is produced to sell something, and manufactured on a budget. It employs materials and equipment with limitations. The realistic production man must fit his ordinary job to the materials at hand, since they offer wide possibilities at the best costs.

Frequently jobs require reprints—on some jobs the initial press run is increased while still on the press. In such instances, it is a great boon to the printer and production man that the paper used be of standard size and weight so that re-orders can be promptly obtained.

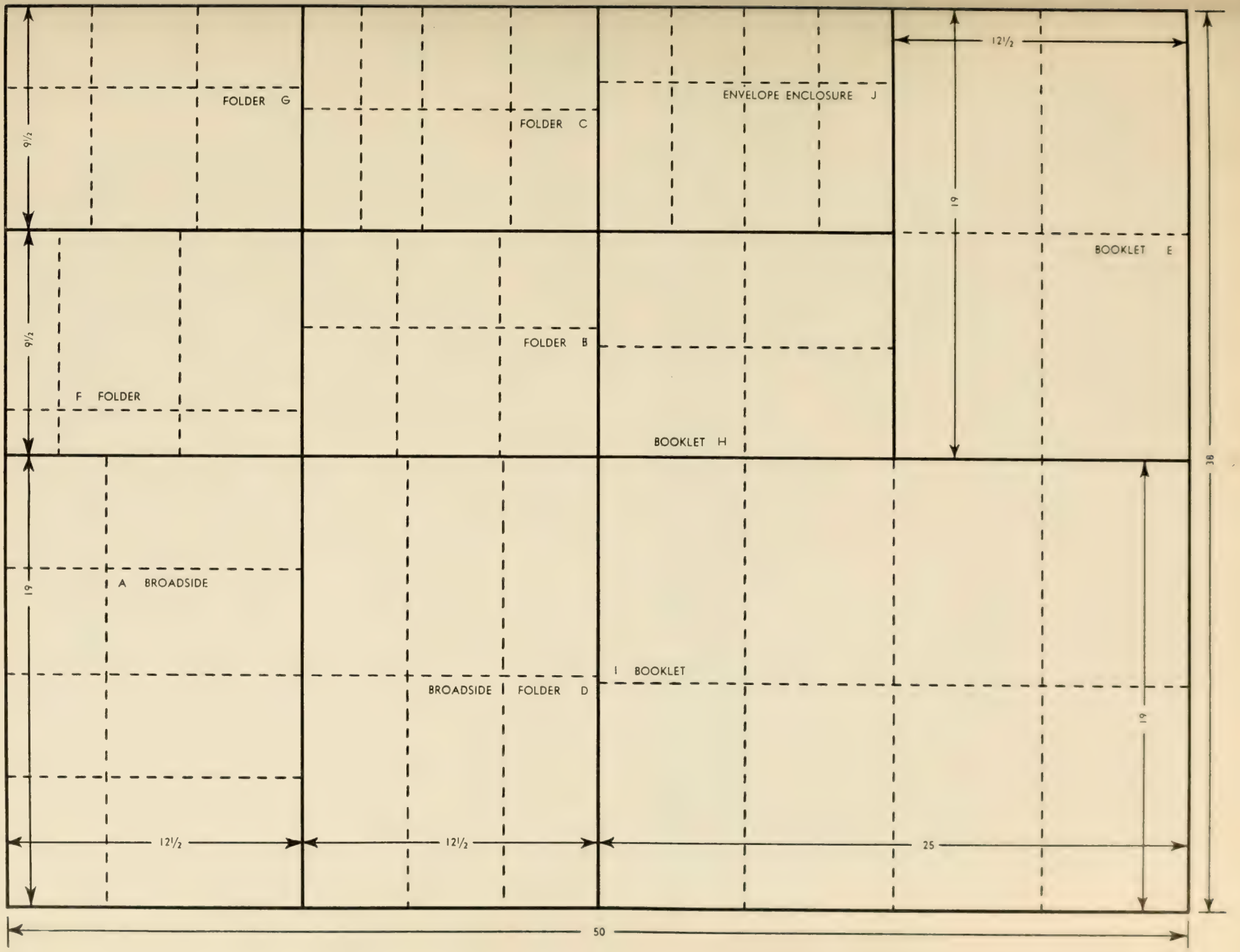
But the advantages of using standard size paper may be canceled if all the production elements of the job are not properly co-ordinated before and after an actual production takes place.

For example: It is advisable to have the printer carefully check the selected sizes, as certain kinds of jobs will require more or less trim than others. Such checking before the making of the plates, or even of the finished art, will eliminate the possibilities of making the engravings or the art to the wrong size. This caution holds true whether or not it is practicable to use standard sizes.

Recommended sizes

The table on page 206 shows twelve standard booklet or book page sizes that cut without waste from five standard book-paper sizes: 25x38. 28x44, 32x44, 35x45. and 38x50.

Economical use of printing papers is achieved by planning folders and booklets to cut out of the regular sizes of printing papers. However, in thus planning, it is necessary to allow for the


FOLDER G
FOLDER C
ENVELOPE ENCLOSURE J
12½
9½
19
BOOKLET E
9½
F FOLDER
FOLDER B
BOOKLET H
19
A BROADSIDE
I BOOKLET
BROADSIDE FOLDER D
19
38
12½
12½
25
50

fact that all printed booklets must be trimmed after folding, and that it is advisable to allow for a small trim when printed folders are cut from a large sheet. Check binder for exact trim required on the job.

Data in the table shown below was taken from material prepared by the S. D. Warren Company. Page sizes listed in the chart allow for trimming and for use of bleed illustrations. If the job is a simple fold that will not require any trimming and if there are no bleed illustrations, the resultant page size may be slightly larger than indicated. However the printer should be checked regarding this as his or the binder's equipment and the resultant imposition are the determining factors for the printed piece.

Standard envelopes

Furthermore, even though the slightly larger size may be mathematically possible in some cases, the larger mailing piece may not fit as well into the standard recommended envelope. In the great majority of cases, the simplest and most accurate procedure is to plan a job in accordance with the sizes listed in this chart and in one of the practical printing multiples listed below.

It will be noted that all but two of the printed units listed in the tabulation on this page plan economically in the multiples 2, 4, 8, 16, and 32 pages. With few exceptions, these units will fit presses, folding machines, and cut from standard size sheets most economically.

Multiples of 6, 12, 20, 24, 28, and 40 pages generally do not fit either equipment or standard paper sizes. Therefore, it is sound planning to design books and booklets in the more efficient multiples. If the contents of the book or booklet cannot be fitted into the most efficient multiples, the advice of the potential printer should be sought.

Page size Trimmed	Standard Sheet size	Practical Printing Multiples (pages)	Pages Out of One sheet	Standard Envelope For job*	Recommended Usage
3¼x 6¼	28x44	2, 4, 6, 8, 12, 16, 24, 48	96	6¾ Commercial (3⅝x6½)	For enclosure with correspondence
3¾x 5⅛	32x44	2, 4, 8, 16, 32, 64	128	2 Booklet (4x5⅝)	For small mailing booklet or to fit into pocket
4¼x 5⅜	35x45	2, 4, 8, 16, 32, 64	128	2½ Booklet (4½x5⅞)	For mailing booklet
4½x 6	25x38 38x50	2, 4, 8, 16, 32, 64	64 128	3 Booklet (4¾x6½)	For mailing booklet
4 x 9⅛	38x50	2, 4, 6, 8, 12, 16, 24, 48	96	4 Booklet (4¼x9⅝) 10 Official (4⅛x9½)	For enclosure with correspondence or for separate mailing
5¼x 7⅝	32x44	2, 4, 8, 16, 32	64	5 Booklet (5½x8⅛)	For mailing booklet
5½x 8½	35x45	2, 4, 8, 16, 32	64	6 Booklet (5¾x8⅞)	For mailing booklet
6 x 9⅛	25x38 38x50	2, 4, 8, 16, 32	32 64	7 Booklet (6¼x9⅝)	For mailing booklet
7¾x10⅝	32x44	2, 4, 8, 16	32	8 Booklet (8x11⅛)	Filing size recommended by Purchasing Agents Association.
8½x11	35x45	2, 4, 8, 16	32	9 Booklet (8¾x11½)	Fits into standard letter file
9¼x12⅛	38x50	2, 4, 8, 16	32	10 Booklet (9½x12⅝)	For demonstration books
10¾x13¾	28x44	2, 4, 8	16	14¼ Catalog (11¼x14½)	For reprints of national magazine advertisements and for demonstration books

* For other styles and sizes of envelopes and for diagrams illustrating the styles, see Pages 244 to 248.



EVEN BEFORE printing you can see and feel the QUALITY of a **FALPACO** COATED BLANK

You know what to expect and your customer knows what he is going to get—a top-notch job—when you use Falpaco Coated Blanks.

You can tell it at a glance, *beforehand*. You can tell it in the pleased look on the client's face, *after the job* is delivered.

So, use Falpaco Coated Blanks for point-of-sales displays, car cards, calendars. Your printer or lithographer will get exceptionable results because Falpaco Coated Blanks are made with *special coatings* for either of these two methods of presswork.

Plan Ahead! See your paper merchant!

FALPACO **FALULAH** PAPER COMPANY

DISTRIBUTED BY AUTHORIZED PAPER MERCHANTS FROM COAST TO COAST.

NEW YORK OFFICE—500 FIFTH AVE., N. Y., 18 • MILLS—FITCHBURG, MASS.

Paper characteristics

When selecting paper for utility, quality, and production requirements, weighing of basic and conflicting characteristics is necessary

Edited by M. S. Kantrowitz

Paper selection for quantity may be pure mathematics, but for quality, utility, and adaptability to specific requirements, it involves a weighing of often conflicting characteristics. Cost is not necessarily a measure of quality, as the more opaque and stronger papers, for example, can be produced from the less expensive pulps.

Selecting the right make and grade of paper is a technical problem that is best done by the printer, rather than by the buyer of printing. The printer usually knows more about paper quality, is closer to the immediate market, and knows exactly where he can get it.

Experienced buyers recommend that selection of the proper sheet be left to the printer, but that the printer be given specifications of the job as to size and number of pages, and length of run.

Let printer select sheet

Some grades of paper are still difficult to obtain in the desired quantity and quality, particularly when ordered on short notice. It is nevertheless important that the available paper best suited for the job at hand be obtained and for this reason it is more than ever a wise procedure to let the printer either obtain or specify the stock.

The wise buyer should inform the printer on the degree of permanence required of the printed job. He should be able to answer questions such as the following:

How long will this printed piece be used or referred to?

Will it require much handling?

Will it be folded?

Is it for outdoor posting?

Will it be mounted, die cut, coated, or finished?

If for mailing, must weight be kept within a certain limit?

The printer or paper supplier will then translate this data into terms of paper quality by considering characteristics that involve cost, printability, and permanence, and, from stock available, will select the paper that is best suited for this job.

Following are some of the characteristics the printer will consider when selecting paper for a job. Some affect the manner in which the paper will print, others the way in which it will meet the requirements for purpose and use. The list includes a brief résumé of the nomenclature, definition, and significance of the more important paper properties.

Abrasive particles: Occasionally found in paper, abrasive materials wear down letterpress plates and scratch the nonprinting surface on gravure cylinders, causing fine hairlines to print in nonprinting areas.

Acidity: Deterioration of the paper fibers in strength and durability is influenced by high acidity in the paper. Acidity is tested and measured in a number of ways and is expressed in terms of pH value. For jobs of a temporary nature such as a direct mail throwaway, acidity is not crucial. However, for more permanent jobs, such as books, or bond or ledger papers used for permanent record work, the pH value should be not less than 5.0.

Appearance: Dirt, resinous specks, pieces of wood, metallic particles, and colored fibers give to the paper an unsatisfactory general appearance. Slime spots, poor formation, and crush produce a mottled appearance and reduce opacity. Paper with poor appearance should be avoided where quality printing is desired, especially in color work.

Dirt in a sheet of paper is either dark material in a light sheet or light material in a dark sheet. Usually found on the surface, particles of bark, metal, hair, or even specks of dye, grease, oil, or resin may be imbedded in the body of the sheet.

High quality jobs, particularly bonds and fine writings, should be dirt free for the sake of appearance. Paper that will come into contact with food-stuffs or even serve as food package labels also should be dirt free. Gritty or abrasive dirt particles will wear, pit, and scratch printing plates.

Ash or mineral content: The mineral filler in paper may be derived from the pulp from which the paper was made, from materials used in surface coating, from mineral coloring materials, from metallic material picked up from piping and machinery in the mill, or it may have been intentionally added. Mineral fillers do not necessarily add to the bulk of paper, as they tend to lodge within the voids of the sheet structure.

Offset papers usually contain about 8 to 15 per cent mineral filler, and uncoated book 15 to 25 per cent. Bonds and writing papers may have as high as 6 per cent filler. The mineral fillers are added to increase opacity. The ash content of coated papers is generally 25 to 35 per cent.

The nature and distribution of the paper filler exert influences upon the printing quality of the ink, depending on the ease with which it is wet by the vehicle in the ink. The influence of fillers as an absorptive constituent of paper is also evidenced by the fact that the wire side of most kinds of paper apparently requires less ink than the felt side, although the felt side is normally smoother and less porous.

In coated papers, the amount of coating, adhesive, and pigment, as well as the ratio of adhesive to pigment, influences the ink receptivity. Blottings, wrappings, boards, and corrugateds have relatively little or no ash content. It is important that mineral filler for printing papers should not include abrasive materials.

Basis weight: This is the weight in pounds of a ream of paper cut to standard size. The basic size for determining the basis weight varies with different kinds of paper. (See Chart of Equivalent and Basis Weights on page 191.) For most of the printing papers, a ream



Gleaming Beauty

TO ACHIEVE
UNUSUAL
ATTENTION VALUE

RIEGEL'S CRYSTALLON

Here is a cover stock of unusual beauty and distinction yet entirely practical from a production standpoint. The crystal design will take almost any form of printing, and the reverse side of the sheet provides a perfect coated surface for halftones or type Crystallon Cover allows the printer or advertising manager to achieve results that will substantially increase the attention value of printed matter.

Stocked in Seven Colors and White
Orchid, Yellow, Green, Buff,
Grey, Pink, Blue
100 Sheets per Package
500 Sheets per Carton
Stock Sizes—20 x 26 and 23 x 35
Special Sizes Cut from 26" and 35" Rolls
Approximate Weight per Ream
20 x 26—80 lbs.

RIEGEL PAPER CORPORATION
342 MADISON AVENUE - - NEW YORK

SEND FOR COMPLETE SAMPLE BOOK AND LIST OF DISTRIBUTORS

This is a sample of White Crystallon Cover. Available in White only at time of printing.

consists of 500 sheets; however, for some types, such as tissues, wrapping, and waxing papers, the ream contains 480 sheets. Bursting strength, thickness, and opacity of a sheet often vary with the weight of the paper.

Paper is generally ordered by the ream or roll, sold by the pound, and used by the surface area. While it is economically advantageous for the manufacturer to make heavy paper (so that more pounds are bought to obtain a required number of sheets), it is of economic interest to the buyer to use as light a sheet as will do the job adequately.

Bulk: This term is applied to the thickness of a pile of a definite number of sheets under a specified pressure. It is important in the calculation of the thickness of books, magazines, brochures, etc.

Bursting strength: An element of utility in some jobs, bursting strength is a property of the sheet structure, the kind and proportion of fibers used, the amount of beating to which they have been subjected, and, to some degree, surface sizing. Bursting strength is measured in terms of pounds per square inch, or "points." It is most important in selecting bag and wrapping papers, cartons, and building papers; less vital in the selection of printing papers.

Color: Paper color is generally considered in terms of the spectrum, as red, blue, green, etc. However, it is also considered in terms of reflectivity as compared to some standard. The utility of the paper may be influenced by this reflectivity. White papers, for example, may vary subtly in shade; some seem to have a cold or blue cast, others a warmer, almost pink cast.

Aside from the psychological value of having a sheet of cold or warm appearance, the quality of process color printing foods, quality carpet, and cosmetics, color. It is essential to have a paper of a uniform color for the whole job when color printing involves faithful color reproduction of such products as appetizing foods, quality carpet, and cosmetics.

Compressibility: The relative hardness or softness of paper is its ability to resist or yield to pressure with a resultant change in thickness. It has an important bearing on printability. If a sheet is compressible, its surface is more easily brought into full contact with the printing form during letterpress printing.

The surface for letterpress work must be smooth to insure uniform contact over the whole inked form. To what extent the paper should be compressible or smooth surfaced should be left to the printer, who knows not only the use and printing requirements of the job and the paper characteristics, but also the capabilities of his own plant's equipment and personnel.

Cracking: Difficulty with cracking of coated paper is experienced in binding during the winter, when excessive dryness of the air in the pressroom and bindery causes the paper to lose some of its pliability. Under these conditions, the coating may crack while the paper is put through the folding machine. When the atmosphere is very dry, even uncoated stocks may crack. However, cracking has been practically eliminated by all manufacturers by the use of hygroscopic materials or plasticizers in the paper coating itself.

Curl: There are two types of curl—inherent, which shows up immediately on the cutters, and moisture, which is a result of the tendency of the paper to come into equilibrium in moisture content with the surrounding atmosphere. Moisture curl can be met by humidity control in the pressroom and by making paper balance pressroom conditions.

Thin, hard sized papers as manifolds curl more readily than thick papers. Unsized papers adjust more rapidly to pressroom conditions and do not curl. Curled paper will not feed well on the press, will not afford a uniform impression, and will perform with reduced efficiency during all phases of the finishing and binding processes.

Finish: Paper is available in coated, antique, eggshell, wove, laid, plate, vellum, and a variety of special finishes. In selecting the finish most pleasing to the eye, it should be made certain that it is perfectly suitable for the printing, finishing, and binding processes that will be employed on the job.

Flaking, dusting: Primarily a printer's problem, flaking affects the printability of a sheet. Clay and other fillers, or fibers, may become separated from the paper by surface friction or from ragged cut edges, and settle in the fountain, or on the rollers or form. They cause black specks of ink with white halos on the printed surface and may fill up nonprinting areas between lines or dots.

Folding endurance: This is an index of the resistance of paper to repeated folding. Its importance varies according to the service the paper must perform. When used on envelope, bag, or carton-making machines, or automatic packaging equipment, the paper or paperboard is usually subjected to one or two comparatively severe folds. Currency and bond papers are subject to continual folding in use and must resist wear as well. To order the paper properly the printer should know how much folding it must be able to withstand.

Formation: Fiber distribution in a sheet is said to be wild when the paper appears mottled, streaked, or like curdled milk when held up to the light. When the appearance is more like the uniform texture of ground glass, the paper is said to be closely formed. A closed and uniform formation is essential in good printing papers.

The nature of the formation offers an experienced printer a clue as to the uniformity of values of other more tangible characteristics. In the case of uncoated book and, to a lesser extent, of writing papers, a wild formation actually produces non-uniform printing, show-through, and detracts from the appearance of the paper.

Grain: Machine or grain direction is the direction of the paper parallel to its forward movement on the paper machine. Normally, the majority of fibers lie parallel to the machine direction. Cross direction or cross grain is the direction of the paper at right angles to the paper machine.

Grain direction affects the tensile, tearing, bending, folding, and bursting strength of the paper. The strength of the sheet is greater across than with the grain. In planning a booklet that will require folding or a job that will be scored or creased, it is well to consider how the folds, scores, or creases will be made and to specify the direction of the grain of the sheet.

Ink receptivity: The ready capacity of paper to accept the transfer of inks from printing surfaces is known as IR, or ink receptivity. In general, the smoother and less porous the paper, the less ink will be required. Relative ink receptivity is one of the important properties affecting printing quality. Tests for ink receptivity will indicate whether the paper is likely to strike through or to offset during the actual running of the press.

Moisture content: Printing paper is at minimum pliability when bone dry; consequently, any condition that approximates such dryness is undesirable. However, paper will give off or take on moisture in an attempt to attain equilibrium with the surrounding atmosphere. Much changing of moisture content in such a manner may cause the paper to curl and therefore not perform with maximum efficiency on the press.

For offset lithography, where the paper actually is in contact with a dampening roller, the moisture content of the sheet is of paramount importance. If a job is to be lithographed or printed by offset, the paper supplier should be so informed well in advance.

Opacity: This is particularly important in book and pamphlet work when it is not desirable that the printing be discernible through the sheet. On mounted jobs or those printed on one side, this characteristic is not absolutely necessary. Some packaging papers are used to protect the contents from light.

The reflectivity of the paper, which bears upon its readability and appearance, is of importance in records, books, etc., and the more opaque the sheet, the more light it reflects. The use of paper fillers such as titanium dioxide and calcium carbonate have added materially to the opacity of modern printing papers.

Penetration and absorbency: The rate at which water, writing inks, printing inks, paints, and vapors penetrate the paper or are absorbed by it may affect its utility for jobs such as packaging, outdoor posters, blotters, writing paper, etc. The relative penetration or absorbency of a sheet is influenced to a large extent by the amount and kind of mineral filler.

Permanence: The degree to which a paper resists either chemical action that may result from impurities in the paper itself, or agents from the surrounding air, is known as permanence. Durability is the degree to which paper retains its original qualities under continual usage.

Paper deterioration results primarily from oxidation and hydrolysis. High rosin content is detrimental to the life of paper as it tends to produce discoloration under the action of light. Paper that must be used for permanent record work can be made with a high degree of permanence.

However, the action of light, the presence of acidic constituents and other impurities in the atmosphere, improper relative humidity, and too high temperature conditions in storage, will adversely affect the best of papers. For most satisfactory results, where permanence of the paper is important, it is advisable to consult with the prospective paper manufacturer as to the best storage methods.

Porosity: The property of a paper sheet that allows a passage of air, when a pressure difference exists across the faces of the specimen, is known as porosity, or air permeability. It is dependent upon air voids in the sheet. Porosity is a factor in determining the quality of printing papers. In the offset process, the extent of the spreading of ink under the pressure of the rubber blanket is largely controlled by the paper porosity.

Resiliency: Resiliency or elasticity has been defined as the property that causes a body to resist deformation and to wholly or partially return to its original dimension from any distortion resulting from an outside applied stress.

In letterpress printing, for example, the type form is pressed into the paper, causing indentation. When the pressure is removed, the paper has a tendency to spring back to its original condition to a degree depending upon the paper and the pressure applied.

Paper with low resiliency is not desired for letterpress printing or for any job in which it will be subjected to considerable outside applied stress. If so used, a permanent indentation or embossed effect may result.

Rosin size: Sizing is a process by which rosin and other materials are incorporated in paper to give it water resistance. Different kinds of paper require varying amounts of sizing, depending upon their ultimate use. Strength, absorbency, penetration, permanence, brightness, cleanness, and color are affected by the amount of rosin size used.

Low rosin content tends toward higher brightness, a cleaner sheet, and better color, depending upon the grade of rosin used. Highly sized paper can be made almost waterproof; that with little or no size can be used for blotting.

In general, rosin is detrimental to permanence. Folding endurance is increased as rosin is added, up to a certain point, then it decreases until the sheet becomes brittle and breaks upon folding.

Static electricity: When paper is used in an atmosphere of abnormally low relative humidity, generally below 35 per cent, static electricity may develop and hinder smooth sheet feeding on the press, cause offsetting, and interfere with jogging and folding. The establishment of constant and suitable relative humidity conditions in the pressroom, bindery, and storage rooms would alleviate this particular kind of difficulty.

Surface bonding strength: The resistance of paper to separation of coating or fibers or to cleavage parallel to the sheet surfaces is known as surface bonding strength. Such separation during printing is called picking.

Picking is caused when the adhesion of the ink to the coating is greater than the adhesion of the coating to the paper, when the paper is poorly made, the ink too tacky, the makeready poor, or the impression too great. With the progress in high speed multicolor printing, the importance of good surface bonding strength has greatly increased.

Picking leaves white spots on a printed image and is especially noticeable in solid areas. The loose specks may settle in the rollers or ink troughs or on the form, causing a press stoppage and necessitating wash-up.

Surface texture: The relative roughness, smoothness, or unevenness of the paper surface is an important consideration. In general, the smoother the sheet, the better the printing. A smooth sheet will require less printing pressure in letterpress. In bond, ledger, and writing papers, the surface should permit easy handwriting and typing, as well as erasure.

On the other hand, if the paper is to be processed in automatic machinery, it should not be so smooth as to be slippery nor so rough as to be abrasive. Certain packaging jobs may require a relatively rough surface to facilitate handling. Rotogravure and letterpress printing require a smoothly surfaced paper to achieve closest contact with the printing surface without the application of abnormal pressure.

Tearing strength: Paper for bags, boxes, wrappings, and for many industrial fields must have good tearing strength. Tearing strength is affected by the inner sheet structure, better treatment of the fibers, surface treatment, and moisture content. Ordinarily, a dense sheet gives lower tear than a bulky one made of the same material and same basis weight. Long fibers offer considerably more resistance to tear than the short ones do.



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Tensile breaking strength: The measure of a force parallel to the plane of a sheet required to produce a defect in that sheet is known as the tensile strength. It indicates the resistance of the paper to rupture when subjected to longitudinal stress and corresponding strain imposed by an outside force.

It is an important measure of the utility of wrappings, bags, toweling, and gummed tape. In printing papers, tensile strength measurements indicate potential resistance to breaking when subjected to strains during travel from the roll through the press in web printing.

Thickness, density: The purpose to which the paper will be put will play a vital part in determining the most practical thickness. Newsprint thickness is important from both the economic and printing performance viewpoint, as clarity of impression and absence of show-through must be obtained at a minimum cost. Index paper thickness must be known to employ filing card space economically. Postal card bristol thickness must be controlled so that it will perform satisfactorily in printing and finishing. Variations in the thickness of book papers affect the uniformity of the printed impression and cause differences in the bulk of bound books. Paper possessing extra bulk can be ordered when needed.

Paper density has a direct relationship to weight and thickness. The density reading is an indication of various other paper characteristics such as ink receptivity, absorbency, punching quality, hardness, and rigidity.

Tight edges: A form of curling, tight edges result when the surrounding atmosphere has a relative humidity lower than that of the pile of paper, causing exposed edges to dry out and shrink.

Water resistance (wet strength): (See Rosin size, above) Printing papers in general need not be highly sized since they are not normally called upon to resist water either in processing or in use. Papers for lithography are an exception and require a fairly high degree of water resistance.

Writing papers usually are heavily sized to permit the use of aqueous writing inks and to facilitate erasing. For packaging and for maps or posters subject to outdoor use, papers have been developed that do not disintegrate even when exposed to sea water.

Wavy edges: The opposite of tight edges, wavy edges result from the storing of paper under conditions of high relative humidity, such as exist in summer. Exposed edges of the paper in the pile absorb moisture and stretch while the rest of the sheet area remains unchanged. This is particularly serious when it is necessary to register colors that may be printed on different days and under different humidity conditions.

Wire and felt sides: Because of the method of forming a sheet of paper, its two surfaces have different textures. The wire side is the one that has been in contact with the wire of the paper machine during the manufacture. The opposite (upper) side is called the felt side.

The wire side is rougher in surface texture. The felt side generally has a sequent finishing operations tend to make the two sides more nearly equal in texture. The felt side generally has a higher gloss, a smoother surface, and a slightly greater rate of ink absorption.

Letterheads and forms printed on one side only are usually printed on the felt side. Except for papers containing appreciable quantities of mineral filler, when uniform printing on both sides of a sheet is desired, the printer will adjust his inking mechanism so as to give the wire side more ink. Paper shipped on skids usually has the felt side up. Roll paper may be shipped either way unless ordered specifically one particular way.

Wrinkling: This is similar to curling.

Paper density and photo-engravings

The man who coined the phrase "Paper is Part of the Picture" was pointing with pride to those areas of a sheet that were not covered up with printing ink. His pride was justified, because, good, bad or indifferent, a sheet of paper represents a remarkable achievement. But some paper does surprising things to halftone impressions and the way to find out why it does them is to look *through* the paper, not merely at it.

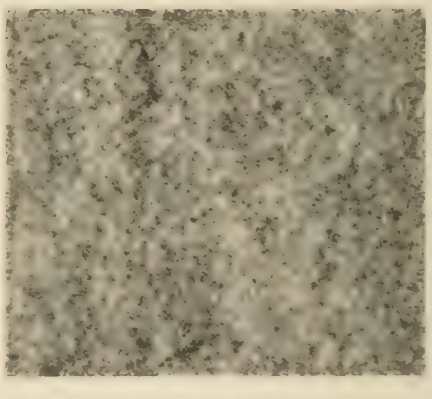
Pulp is part of the paper, and if it is unevenly distributed during the process of manufacture, the sheet will have certain areas that are thinner than others; adjacent to these will be other areas that are thicker. These variations can be seen by holding the sheet up to the light.

Pull all the tricks you know—none of these is a complete test, unless you also hold sheet to a window and see how evenly or unevenly it transmits light.

If the paper has been coated on two sides, the variations will be much less visible and will cause much less trouble, but uncoated M.F. paper can, and frequently does, make a really fine halftone look as though it had been quite poorly made. The reason for this is obvious.

The printing surface of a halftone is in one plane. Tonal variation is obtained by the photomechanical processes that make the dots vary in size. After these dots have been made, they should all be printed with uniform pressure. Too little squeeze will not bring them up and they will be too light and may appear to be broken; too much squeeze will push them into the paper and they will appear to be too heavy and dirty.

Paper that varies considerably in density in different areas automatically creates heavy and light impressions from corresponding areas of a halftone, and, as a consequence, distorts the dot formation. The effect is that of a mealy, broken tone, and paper is definitely responsible for this unsatisfactory part of the picture.



Paper density variation is demonstrated by making a photographic print through a sheet of magazine stock. The sheet used in this test was taken from a lot supplied to a photo-engraver by one of the leading national publications and is typical of that used by other media. The dark areas represent the thinner, more transparent parts of the paper, while the lighter spots are the thicker, more opaque parts. A distortion of dots may result.

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Paper for offset lithography

High grade work requires specially made paper with a tightly bonded surface, resistance to acids, and a carefully balanced moisture content

C. W. Latham

Reproduction by modern offset lithography is a chemical as well as physical process; therefore, special care must be exercised to select raw materials particularly suited to its rather exacting requirements. Certain lithographers handle almost any type of sheet on their presses, but generally, for high grade work and a minimum amount of trouble, the offset pressman works with inks and papers designed specifically for his use.

Papers for offset lithography must be carefully made, taking into consideration several factors that do not apply to those made for letterpress or gravure work.

The surface must be tightly bonded to withstand the pull of the blanket and short, tacky inks. The surface must not react with the acids used in the dampening solution because, if it did and the acidity of the press-dampening solution were neutralized, emulsification of the ink would take place, resulting in a tinting condition.

The fact that water actually makes contact with the sheet must be taken into account, and the surface designed to withstand it. The sheet itself must carry an amount of moisture that is as closely as possible in proper balance with the humidity of the pressroom air.

All paper is made from some type of pulp, which consists of vegetable fibers suspended in water. Fillers, sizing, and color are added to the pulp before it is made into paper. Most pulp is made from wood, and the fibers are separated mechanically or by cooking with chemicals. With the exception of rag pulps, the distinctions between the various pulps are made mainly according to the method used to produce them. For a fuller description of paper pulps, see page 225. Following are materials used in the manufacture of paper for offset:

Bleached old paper stock: This may be used as a filler pulp, for it has fair strength and good opacity. It is comparatively low in degree of brightness, and its best grades are not quite equal to soda pulp in this respect. An offset sheet containing a reasonable amount of old paper stock may be expected to have good running and handling qualities.

Reclaimed ledger stock: This pulp is obtained by de-inking old ledger papers by cooking them in dilute caustic. These fibers have some of the properties of sulphite, but are shorter and softer, and do not respond to mechanical beating in the same manner as new pulps.

Reclaimed book stock: A short-fibered, filler type of pulp, this is obtained by de-inking waste book papers. This stock contains considerable mineral filler, which is to be expected since fillers usually are present in book papers.

Sizing: Papers for offset invariably carry fairly heavy internal or beater sizing. This prevents undue absorption of moisture when run through the press, with consequent dimensional changes and often loss of surface strength. The sizing may be resin or wax, usually the former, and sometimes a combination of the two. A heavily-sized paper is referred to as "hard sized." Alum is always added to the pulp mixture to fix the size on the fibers.

Surface sizing with an adhesive such as cooked starch is often used to obtain a surface that will better resist "fuzzing" and "picking" in the press.

The binder used to stick the pigments of the coating to the fiber base stock of offset enamels or coated lithos is also referred to as "sizing." Thus, for letterpress work, less adhesive is used and the coating is "soft sized," and for offset work the coating carries more adhesive and is "hard sized."

The adhesive or sizing usually is a protein such as casein or soybean, and must be chemically waterproofed. Starch in combination with synthetic resins has found some acceptance in the field of offset papers, but its use is decidedly limited in other categories.

Filler: A number of white pigments are used as fillers in papers for offset, the most being clay, calcium sulphate, and titanium dioxide. All enhance the appearance and ink receptivity of the sheet and improve brightness and opacity. Titanium dioxide is much more effective than the others, but it also is more expensive.

The following are compromise characteristics of papers for offset lithography:

Strength: It is important to note that as the strength properties are improved by increased beating, the important properties of expansivity, opacity, oil absorption, and tendency to curl are affected adversely. The addition of filler pulp tends to counteract the adverse effects of beating.

In general, the papers made from strong pulps have high strength, but also unsatisfactory expansivity, opacity, oil absorption, and curling properties. The filler pulps are excellent in these latter respects, but have insufficient strength to be used unmixed.

The strength of papers made from strong pulps is developed largely by beating, and is closely associated with gel formation or so-called hydration, which produces the undesirable properties. Filler pulps hydrate only slightly. Hence, the best all-around properties in an offset paper are obtained by blending strong pulp with filler pulp. The admixture of filler pulp tends to permit sufficient beating to obtain suitable formation and finish without all the undesirable effects by hydration.

Folding: It is noteworthy that a high fold ratio is consistently opposed to some of the other desirable properties of the papers, particularly low expansivity and curl, and high opacity. It is of interest also that a paper made of a mixture of two pulps usually has a fold value only slightly higher than that of the weaker pulp, instead of approaching the average, as one might expect, and as is the case with other strength properties.

Moisture contact: Waterproof and moisture-resistant liners are always used to offset paper, whether packed in cases,



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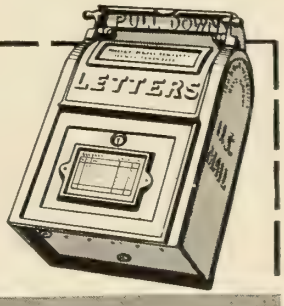
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skids, or bundles, or in rolls. Upon unpacking, the sheet stock should be checked at once with the paper hygroscope to determine its moisture content relative to that of the pressroom air. If satisfactory, it should be rewrapped immediately until it goes on the press; if it is unsatisfactory and if a multicolor job is involved, it should be hung and conditioned.

It is important that unused stock be put promptly in a moisture-proof wrapper immediately after a press run is completed.

Turning now to finishes, both uncoated and coated paper is usable.

Uncoated papers: Modern offset lithography, being versatile, can print on a wide variety of surfaces, all the way from a rough eggshell or antique to a highly finished supercalendered sheet. In addition, a variety of embossed designs are available and suitable for general offset lithographic work.

Coated papers: Most coated papers carry a fairly high finish, but occasionally mills are asked to produce a dull finish sheet satisfactory for offset work. Because of the high strength requirement of the coating, the finish on coated sheets for offset is never as high as on corresponding grades for letterpress.

This is possibly an advantage, however, for the lower finish has less glare and is therefore in a way more reliable. Moreover, the offset process permits high fidelity reproduction of fine-line screens on paper with comparatively low finish, whereas letterpress halftone printing demands the utmost in smooth surface and finish.

As to types and general usage of papers for offset lithography, offset paper is used for general printing of books, magazines, and advertising pieces. It is made of fairly strong fibers, well sized, and carrying about 10 per cent filler, which may be partly a titanium dioxide pigment to enhance its opacity and brightness. Practically all first class offset is surface-sized—usually with starch.

Plain offset papers are classified No. 1, No. 2, and No. 3, or by mill brand, according to their quality with regard to brightness and cleanliness.

A No. 1 sheet will usually be composed of all bleached sulphite pulp and may contain some titanium dioxide or other premium grade filler. A No. 2 sheet may be composed predominantly of bleached sulphite pulp and possibly a small amount of premium grade filler. A No. 3 sheet will usually carry a fairly high percentage of secondary fiber such as soda pulp or bleached old paper stock.

Paper containing the bleached old paper stock may be expected to have slightly lower brightness in some cases, but it will also tend to have much greater opacity.

Offset papers often are embossed to give unusual effects, and the term "papetrie" or "fancy finish" sometimes is applied to such papers in the lighter weights. In the higher grades, much papetrie is consumed by the producers of greeting cards. Heavy weights of offset, both plain and embossed, make excellent cover stock because of their strength and durability under frequent handling.

Machine finished litho: Used principally in the label field, this usually is not tub sized but may carry from 6 to 10 per cent filler. The fairly strong pulps generally used are usually supplemented by the addition of cooked starch to the slush stock before it goes to the paper machine.

This starch increases the internal bonding strength of the sheet and helps eliminate the possibility of fuzz on the surface. This is important because much of this grade is used on multicolor, high-speed label presses, where a good "tight" surface is a primary requirement for best results.

Super litho: Constructed exactly like a machine finished litho, super litho receives a subsequent calendering or ironing to improve the flatness and shine of the surface. Certain super lithos, especially so designed, will hold up gloss inks and even spirit varnish remarkably well, being good for display jobs.

Machine finished lithos and super lithos are designated as to grade by the letters A, B, C, and D. The stepdown from grade A is in brightness, cleanliness, and to some extent in strength.

Duplex super: For some labeling jobs, the super litho has too much finish on the pasting side, so a super litho with a dull back is manufactured by supercalendaring only one side of the paper.

Bonds and ledger papers: Practically all of these are suitable for offset lithography, even though designed primarily for pen-and-ink work. They are usually constructed of strong fibers, sometimes partly or wholly of rags; are well sized, and are usually run without any filler. They are practically always tub sized; on the lower grades, starch is used, and on the higher grades a waterproofed animal glue. White ledger papers are used principally for the printing of business forms. Bond papers are used for both letterheads and forms.

Offset enamel: This coated sheet is produced by using a strong, pliable fiber base on which is applied a coating designed physically and chemically for the offset press. The surface pH of the coating is important, and for best results falls in a range from 5.5 to 8.0, predominantly at 6.0.

The coating is made up of one or more pigments and an adhesive that must be capable of being waterproofed. In turn, the pigments must be such that they will not react with the acid etch on the press.

Because the surface must be more securely bonded to the base stock than is the case on a conventional enamel for letterpress work, grade for grade offset enamels will have lower brightness than their letterpress counterparts. This is not a serious drawback, however, and results only from the necessity of using a coating with a higher adhesive content and one in which bright calcium carbonate may not be used. Where cost is not a factor, titanium pigments will more than offset the difference.

Offset enamel paper was produced originally because of a demand by lithographers for a sheet that would enable them to enter the higher priced field of advertising work, previously dominated by the letterpress printer. The development has been so successful that for many jobs the work done by offset now surpasses that done by other methods. Beautiful results by four- or six-color process have been produced, and gloss inks have been used with outstanding success in this field.

Coated litho: For highest grade label work, a coated litho is employed. Here a fairly strong base receives on one side a coating similar to that used on offset enamels. Since most labels are varnished, the coating is made somewhat harder than that on offset enamels. This is done to hold up the spirit varnish long enough so that it will dry before it penetrates the coating and discolors it, making the sheet more transparent.

The use of gloss inks has demanded, in some cases, an even harder coating on coated litho for maximum hold-up of the gloss vehicle, and this class of paper has been termed Gloss Ink Litho.

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Paper testing

Specific tests the printer can make, in advance of the press run,

to insure that the paper selected has all of the necessary characteristics

James E. Slaughter

It is a truism that to get quality of printing, the printer should not be rushed off his feet to meet a delivery date. There are many specific reasons why this is so. The ideal press speed is not the maximum speed of the press. Careful makeready takes time. Perfect register and rushed jobs do not go hand in hand.

Furthermore, a job planned far in advance can be handled better because the printer can have more time to order and obtain the inks and stock most suitable for the job. If he can have enough time to check the ink and the paper stock well ahead of the press run, he not only will be able to work with the most suitable materials but also will be able to test them and reject them if necessary in advance of the run, thus avoiding costly delays or the employment of less satisfactory last minute substitute materials.

Checking plates

To assure the buyer of printing of a quality printing job, it is usually necessary for the printer to check carefully the physical properties of all the material supplied to him and with which he must work. He must check to see that the correct plates are sent, that they are not scratched or damaged, that the blocks are not warped, that the plates are square, and that the right kind and quality of furniture has been used. He will also check the plate against a dummy to be sure that every element that should be in the plate is there, and that all plates needed for the form are on hand.

Halftone plates are checked with a glass to be sure all areas are etched flawlessly. The plate is also checked for height, for joining of rules, etc. All this is done when time allows; not when the job is put on the press, but when the material arrives at the plant, so that any flaws detected can be corrected without a costly press delay later. The tests are made with various instruments and on the proof press.

Less obvious to the printing buyer, but of equal importance, is the fact the printer in a similar manner checks the suitability for the job of the ink and the paper. The ink is checked, usually against standard batches, for drying rate, crystallization, chalking, pick, tack and trapping, sharpness of print, lay, color, and offset. The inks should be so checked the day they arrive at the printing plant so that mistakes can be remedied promptly.

As an example of the number of considerations a printer should check and the time required to do so properly, here is how he checks his paper:

As in the case of inks and plates, paper should be checked the day it is received, to make certain that no errors or damage occurred in shipping and handling. The printer should have the cases opened and the contents checked, particularly the smaller quantities, to make sure, for example, that a white enamel as ordered was received, instead of India, or cover stock instead of bond, and so on.

If the cases and skids are carefully opened, they can then be closed again in their moisture-proof wraps to prevent their losing or taking on water on the edges of the pile and causing wrinkles, bellying in the center, etc., if only a one-color job is to be run. If two or more colors are to be printed, the paper should be "hung" or put in equilibrium with pressroom humidity.

The value of a complete air conditioning system for a printing plant can hardly be overestimated, especially in considering methods of correcting paper trouble, the adjustment of humidity, dehumidifying in summer and injecting moisture in pressrooms in winter. When air is properly conditioned, it is amazing how quickly many of the more common difficulties that are most frequently caused by paper straighten themselves out.

A frequent source of trouble with papers is that the stock may not have been trimmed squarely. This factor can be checked simply by placing the opposite edges of the sheet together, without creasing, and comparing the lengths. Any differences in edge lengths will indicate that a certain amount of the stock is out of square.

Many times the grain direction of the stock is an important factor in the finished job or the way it runs. A good way to check grain direction is to crease the sheet hard, first along one dimension, running the index finger along the crease, and then crease along the other dimension. The rougher feeling crease will be across the grain, and the smoother crease will be with the grain.

Testing felt side

When a sheet, particularly an uncoated one, is to be printed on one side only, or if halftones are to be printed on one side only, the felt side should be used, it being the smoother.

To determine the felt side of a sheet, the printer holds the sheet in the left hand with the grain running vertically, and with the right hand slowly starts tearing. He continues down and circle tears to the right, slowly. Then he turns the sheet so that the far side is now nearest, and makes the same test. The side that splits the most is the wire side, and the side on which the tear splits the sheet the least is the felt side.

A simple and generally used method for checking a sheet for smoothness, and thus in some measure the way it will print, is to lay a known sheet across part of it, pick both sheets up, roll up or fold, and compare the type of glare it reflects.

Laying a sheet down and watching the way in which it tends to curl can also be helpful. Perhaps the sheet can be run in such a way as to take advantage of the curl if it is in one direction only—such as curling away from the impression cylinder to make stripping easier. If an extremely heavy solid is to be printed, the penetration of the ink will tend to straighten the curl rather than aggravate it, when only one side of the sheet is scheduled to be printed upon.

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Excess foam or bubbles on a paper or a coating machine will cause pinholes in a sheet, and pinholes will not print halftones or solids properly. About the only way to pre-check a load of stock for pinholes is to examine carefully several sheets selected at random from the shipment, using a good glass with a fairly wide field, such as a linen tester. A light placed so that it shines through the sheet, or even above the sheet so that pinholes can be picked up from the differences in reflection, also will help considerably.

However, the most conclusive tests as to the printability of a sheet can only be made by a proof press—as is used in checking inks. A proof press properly used is far superior to all the ink smear and wax tests, even in the hands of the best technicians.

Getting the ink and paper together as soon as possible is important. In this way, the more common troubles relating to pick tendencies, chalking, drying, mottle, gloss, etc., may be discovered and eliminated before the supplies go to press. Inks and paper are interdependent and should be checked together for best printing results.

In checking one sheet against another, or against a standard, two strips, each of same caliber and a little larger than half the size of the form, are butted together on the cylinder and moved into the open grippers so that one gripper catches the two butted edges. An impression is then made by the form that has been inked by a standard ink, or the ink that will be used in printing the papers being tested. This produces an impression simultaneously on the two papers under identical conditions of impression, film thickness, impression speed, etc., and permits direct and conclusive comparisons of the sheets being tested.

Absorptiveness

As for checking the relative absorptiveness of two sheets, they can be placed side by side, butted together, and a loose draw-down again made with the one ink to be used. The sheet on which the ink dulls quicker is probably the more absorbent and very likely will be the safest from the standpoint of offset.

Somewhere in the mill or merchants' warehouses, an order for a certain offset enamel might be filled with a letterpress enamel; as these papers could look alike, the difference might not be discovered until trouble developed on the press, which would then have to be shut down until the paper could be replaced. Such a delay might last from a few hours to several days.



Grain direction: Test by folding paper both horizontally and vertically and feeling the creases. The rougher feeling crease will be across the grain, the smoother with the grain.



Felt side: To determine which is the felt and which the wire side, hold paper in left hand with grain running vertically, start tearing with the right hand. Circle tear to the right slowly.

Possibly the paper might not have been made properly. Trouble from this source can easily be avoided by several quick tests. The simplest is merely to wet a finger and work it around on the paper in an attempt to loosen the coating. If the finger acquires a white, milky-looking deposit at point of contact, the sheet probably will be unsatisfactory for lithographic work.

Another check is to put a few drops of a one-to-one solution of 85 per cent phosphoric acid and water on the sheet. If bubbles form, there is ample reason to call on the supplier to replace the stock without holding up production.

If a sheet is to be varnished after printing, the customer is entitled to a good-looking job, whether by press or spirit varnish. While there is a considerable difference in varnishes, the paper probably has an even greater effect than the varnish on the final result.

The best varnish will leave much to be desired on a poor varnishing sheet, while a mediocre or poor varnish may look well on a good sheet. Paper made by the same formula and mill can, and often does, vary considerably from run to run, probably more in its absorption qualities than in any other respect. This factor cannot be judged by looking at the paper, so it should be proofed with varnish, either press or spirit, before it goes to press.

Paper also has considerable effect on the color of a varnish film. In general, the more absorbent sheets will make a varnish appear more yellow and less glossy. The varnish usually will appear clearer and glossier on harder sheets. But this is not always the case, for color of the base stock, and transparency and oil wetting properties of the coating, have considerable bearing on varnish color.

If a printer has on hand a varnish that in the past has given good results, and that on a certain run does not repeat those results, it would be well to check the varnishing qualities of the paper against a known standard by the split proof method described previously. If this is done before the run is started, this property might be detected and appropriate action taken before the job is half printed. However, the appearance of varnish over a solid ink film is affected little, if at all, by the paper.

Paper and inks are interdependent, and troubles apparently caused by one may actually be due to the other. The only way to determine definitely which is responsible is by checking.

This pre-checking, however, can be done by the printer only when a job is planned sufficiently in advance to permit him to order and obtain the most suitable materials and when he is not so rushed for delivery that he has time merely to open his paper and load it on the press, open his cans of inks and dump them in the fountain, lock up his forms without checking them, then rush through his makeready and run at top press speed.

When the printer asks for time to do a quality job, he is not stalling. He is, in brief, saying that he needs time to do the sort of things described herein.

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Decorative papers

Printed and embossed designs for wrappings and box coverings offer possibilities for booklet covers, direct mail pieces, and publication inserts

Charles V. Morris

Interest in decorative papers, particularly in the prints, foils, and metallics, has developed to unprecedented proportions in the packaging, greeting card, and direct mail advertising fields.

In contrast to past practice, there is an excellent opportunity for the creator to develop completely original designs integral to paper and paper processing. Established embossing designs and the prints are most often simulations of fabrics such as linen, herringbone tweeds, silk brocade, laces, and basket weaves; or leathers, such as pin seal, alligator or ostrich; or wood grain reproductions of fabrics.

Paper mills, with watchful eyes on fashion trends, constantly cover the textile markets to find new fabrics for such reproductions. Many of these designs are beautiful and will continue for many a year. One paper man can point to an embossed leather pattern that his company has been producing for more than 70 years. Off and on, it returns to popular demand. Manufacturer's swatch books—and there are hundreds of them —show thousands of surface patterns that are popular year in and year out. And, moreover, more and more manufacturers are entering this market, thus increasing the number and variety of designs.

Nevertheless, there is a constant clamor for something new. The experts in decorative papers are trying to forecast what the next trend will be. So far, a preference for more dramatic floral prints and for backgrounds of solid color with brilliant overprints is noticeable. In this dominating spirit, bold stripes are also popular, but prints in pastel tints and subtle white-on-white patterns represent large tonnage for manufacturers.

A number of manufacturers of fancy paper made excellent protective papers, with greaseproof and water-vaporproof qualities for wartime ordnance wraps and other overseas shipments. Many of these offer the user a completely new type of packaging paper. Some may be combined with decorative printed or embossed effects to provide eye appeal, and the designer has an excellent opportunity to adapt these developments to civilian use.

Leading consumers of decorative papers are stationery, candy, cosmetic, and jewelry manufacturers. Another big field is gift boxing of all kinds. Of all these, the manufacturers of boxed stationery and papeterie are said to be outstanding in the determination of style trends.

Carloads of paper are used for this purpose every year as box coverings and box linings. The designs selected are observed eagerly by the fancy paper, greeting card, and box-making industries because of the influence on other lines of merchandise. Creators and producers of direct mail advertising have also learned to use decorative papers.

Company trade-marks

Competitive merchandising is placing increased emphasis on the value of trade-mark and brand identity. Many companies have their own trade-mark papers. Manufacturers of fancy paper believe there will be more identifiable papers used in the future by packagers and direct mail advertisers.

The prospective users, however, should know that trade-marked papers are feasible only for the packer who can use upwards of 1,000 reams (approximately 26,000 pounds of average weight box paper) before the cost of art work, engraving, and other specialized production factors are covered.

Most makers of fancy paper have printing facilities and embossing rollers for producing several hundred different designs. In normal times, they introduce eight to a dozen new printed patterns in various colors and four or five new embossing patterns a year. Old designs are kept, and many are revived again and again at five- to 10-year intervals; others are inactive unless a particular order is requested.

With the paper market clearing all of these designs and many new ones are ready for the resumption of the decorative packaging that is such an important aid to modern merchandising.

Any of the fancy paper stocks and methods of producing them listed here are possible, but the user should select them with care, basing his choice on measurements of consumer preferences, the character of his market, the quantity he requires, the cost factors, and numerous other considerations.

The standard stocks include both uncoated and coated box papers. Uncoated is the kind of paper, such as rag, sulphite, kraft, or groundwood, that is to be coated, embossed, etc. It may be antique, natural finish, or supercalendered.

Coated box paper is prepared by several processes:

Matté: A casein- or clay-coated paper made on brush coater or roll coater, or some type of brushless coating machine.

Brush finished: A paper surface is polished by brushes. The dried, coated paper is run over a revolving drum and brought into contact with many revolving brushes. A high finish results. As a general practice a sulphite stock is used. The finished stock is used for labels, greeting cards, and boxes.

Plates: Finished smooth by cold rolls through pressure in a stack calendaring machine. For a very high finish, this paper sometimes is subjected to steam before being calendared.

Friction glazed: Surface is polished by heated rolls in a friction calendar, friction being produced by the faster rotary action of the steel polishing roll against the slower cotton roll.

Mica: Coating material is comprised of ground mica crystals to give paper a sparkling, finished appearance.

Flint: Paper surface is highly polished by being rubbed across the sheet with flint stones. This process is slow but is considered to be effective.

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Waterproof: Paper is coated, then top-surfaced with waterproof material, such as casein or gums; or coated once with heavily sized color; or mixed with waterproofing gums.

Waterproof lacquers: Coated papers using pigmented pyroxylin lacquers, which produce an unmottled surface with antique or high gloss finish.

Flock: Paper coated with varnish, on the surface of which is shaken or blown finely powdered cotton, wool, rayon, or silk, known as velours.

Metallic effects

Gold, platinum, tints: Achieved by grinding bronze (gold), aluminum (silver), and copper with casein and other gums or with pyroxylin lacquer; paper generally is stack calendared to appear smooth and brilliant.

Silver, glazed (silver coated): Coating of "argentine," a precipitate of tin, that is first dull gray in color, is polished to a silver finish by a friction calendar. "Argentine" finish is now also available in gold and colors, both plain and embossed.

Pyroxylin: These are lacquered in bright, dull, and pearly irridescent effects. Pyroxylin papers are waterproofed and are also available in metallic tints. Generally a sulphite stock is used as a base; occasionally sulphate. Because they are waterproofed pyroxylin papers are particularly adaptable to box covers, menus, food wrappers, and other jobs for which moisture resistance and waterproofing is important.

Thermoplastic coated: Especially suited for wraps, bags, envelopes, and labels, this kind of paper is so coated that it will heat seal.

Half fine: Patches of a thin copper or aluminum alloy approximately five inches square are laid on paper that has been coated with an adhesive. Patches overlap to form a continuous metallic surface, and the overlapping edges are brushed to remove any surplus.

Foils: Continuous sheet of metallic foil, usually tin, aluminum, zinc, or their alloys, is bonded to the paper by some form of adhesive. For further data on foil, see the article on Aluminum Foil, appearing on page 240.

Effects produced

Fancy box-covering papers can be either embossed and tipped with colored or metallic ink, or printed in designs of one or more colors. They may be decorated in mottled, speckled, streaked, or blended effects, or in a definite design by any of several processes, such as wallpaper or other rotary printing machines, intaglio printing, print or ink embossing, or topping:

Kidder: Oil-ink surface printing from curved plates locked on a roller form and registering each impression as the paper runs beneath.

Wallpaper: Water-color surface printing in one or more colors from relief-pattern rollers, one for each color, registered to make the complete design.

Aniline: Stained or printed, or both, with rubber rollers and relief-cut patterns, generally with alcohol gum colors.

Intaglio or rotogravure: Papers printed from a pattern engraved on a copper roller by the photogravure process or with a pattern mill. The ink, which may be water-color, aniline, oil, or lacquer, is wiped off roller by a thin blade. The amount of ink is controlled by the angle of the blade and the engraving depth.

Embossed papers

An embossed paper is one having a pattern in relief produced by any of the following processes:

Regular: A steel pattern roller and a wet paper-matrix roller are mated together.

Friction embossed: Pattern is pressed against a smooth paper roller run without gears, which permits a slight friction as it makes contact with the pattern. Friction is produced by the use of cold and hot pattern rollers, the latter being bored and piped for steam heating. The combination of pressure and friction causes a deepening of color in the area of the pattern.

Print embossed: Embossing and printing done in one operation by the application of ink to the embossing pattern.

Topped and embossed: A two-toned decoration is made by applying color through a roller to the surface of the embossing.

Spanished: Color is applied to the entire surface of the sheet, then scraped off with a blade, leaving varied tones of the decorating color, depending on the varied depth of the embossed surface.

Common: Patterns in common use by manufacturers of embossed paper include skytogen and certain leather grains, moiré, basket weave, Persian lamb, and swirl designs.

Exclusive: There are several hundred different embossing designs that have been originated or purchased by individual manufacturers, who thereby own these designs exclusively. Most manufacturers have exclusive designs of their own which are protected by registration at the Patent Office.

Rubber roll embossed: Newest embossing method, whose chief asset is economy. Felt finish is applied without use of costly felts by utilizing rubber-coated steel roll operating adjacent to smoothing press on paper machine.

The following descriptive terms are commonly connected with box papers, their sales values, or qualities:

Fabric designs: Papers printed in designs that imitate various fabrics, commonly known as "fabric prints," or embossed in imitation of fabrics, such as rep, linen, burlap, and others.

Leather grain: Papers with designs such as grains in leather produced by embossing, spanishing, printing, or coating. Common examples are alligator, seal, walrus, caracul, etc.

Other uses

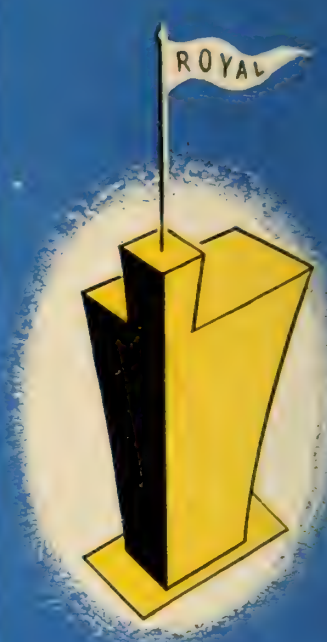
Decorative papers also can be utilized for a variety of other printing purposes. Striking booklet covers, unusually eye-appealing direct mail pieces, and publication inserts can be produced on them. Being of different stock, texture, and design than the rest of the publication or booklet, they should attract considerable attention. In addition, some products can use them for a functional tie-in. A leather goods manufacturer might use a leather grain paper.

However, because some of these decorative papers require special care in printing and in selection of inks, and pose various other production problems, the printer, binder, and finisher should be checked as to their adaptability for the job under consideration.


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Pulp for paper

Production characteristics and method of manufacturing most widely used pulps; far cry from rag pulp to predominantly wood pulp era of today

Edited by M. S. Kantrowitz

Paper has been defined as a matted or felted sheet of vegetable fibers formed on a screen from a water suspension. These vegetable fibers are composed of what is technically known as cellulose having the chemical formula $C_6H_{10}O_5$.

The fiber of many different kinds of plant vegetation can be made into pulp and paper. In general, the plants thus used may be divided into three major classes: seed hair fibers, such as cotton; wood fibers; and stem or bast fibers, such as flax, hemp, jute, etc.

The kinds of pulp now available vary in their suitability for the manufacture of paper for different purposes. Following a brief description of the historical development of the different paper pulps, this article will concern itself with a description of each kind of pulp and will indicate their relative suitability for the making of papers for many purposes.

Until the middle of the nineteenth century, most paper was made from cellulose obtained from rags, old rope, textile waste, and straw. Today, wood is a leading source of pulp for paper making.

The change took place around 1854, when a new paper-making fiber was brought to the United States from England. Known as soda pulp, it was essentially wood pulp so cooked in chemicals as to eliminate the less desirable elements of the wood pulp. It was the first of the three chemical pulps now in widespread use today.

Groundwood pulp, made mechanically from wood, was developed shortly thereafter. The first sulphite pulps were made in the United States in 1867, but not until the late eighteen eighties were they sufficiently perfected to make much commercial headway. Sulphate or kraft pulp was developed early in the twentieth century.

Groundwood papers are not as permanent nor as suitable for fine printing as the rag papers used in past centuries. However, the commercial progress of printing demanded a paper better in quality than the groundwood and less costly than the rag papers. The chemical pulp sheets, soda, sulphite, and sulphate, developed within the last century, and the various finishing and coating processes evolved with them, have supplied the answer to this demand.

Rag pulp making

The first kind of production to be considered here is that of rag pulp.

Cotton reaches the paper mill in the form of rags and spinning waste. Cotton hull fiber or linters, which are the short fibers removed from the seed by mechanical processes, are also occasionally available and can be used in high class papers.

The two main sources of supply for rags are new cuttings from the textile and garment factories, and old rags collected from households. The first step in preparing rags is generally dusting or thrashing. This is not required for new, clean textile cuttings, but it is necessary for old rags, to remove dirt in the creases and seams.

The rags then are sorted into the various arbitrary grades maintained at the mill. During this sorting, the larger rags are cut into pieces, the seams are opened, and buckles, buttons, hooks, and iron are removed. New rag cuttings are also carefully examined and pieces of wood, colored paper, and unbleached material are removed.

Sometimes the dusted rags are passed over a magnetic separator to take out bits of iron and steel that escaped the sorters. These include hooks and eyes, metal clasps, tacks, nails, buttons, and any similar foreign matter.

The next step is cutting the sorted rags into pieces two to four inches square. This is generally done by machinery, although hand cutting is sometimes practiced. After cutting, the rags receive a final dusting and then are conveyed to the boilers.

The object of the boiling process is to dissolve or saponify the grease, to loosen the dirt and other impurities so that they may be easily washed out, and to destroy the coloring matter. Another important function is to destroy wool.

The chemicals used in cooking the rags may be caustic lime, caustic soda, or a mixture of lime and soda ash. The caustic soda necessary is variously given as 1 to 10 per cent and the lime as 5 to 20 per cent of the weight of the rags. The steam pressure runs from 11 to 50 pounds, 30 pounds being a fair average. The time of boiling ranges from 2 to 14 hours and has been as long as 30 hours in some instances.

After boiling, the rags are dumped into washing engines that remove the alkali from the stock, which then is subjected to bleaching with calcium hypochlorite.

The stock next is washed to remove the chemicals, and placed in drainers to allow the water to drain off, taking soluble impurities with it. It is permitted to remain in the drainers until used for manufacturing the paper.

Wood pulp varieties

Wood pulp, which is divided into four kinds, is made from a number of varieties of wood.

Groundwood pulp is usually produced from spruce, fir, western hemlock, loblolly, pine, poplar, birch, soft maple, and southern gums.

Sulphite pulp is generally made from any of the spruces, firs, or hemlocks.

While soda pulp can be made from almost any kind of wood, those in general use include poplar, maple, birch, beech, and other trees that are classified as deciduous and have short, fine fibers, which make for the creation of a uniform and closely formed sheet.

Sulphate pulp is made from almost any wood, but especially from pine and the coniferous woods that have long fibers, which yield a strong pulp that is excellent for the manufacture of wrappings.

While mechanical or groundwood pulp is obtained in almost the full amount of the wood ground up (only the very fine material and water-solvent elements being lost), chemically made pulp amounts to half or a little less than half of the

dry weight of the wood used, the rest being dissolved or burned out by the chemical cooking.

Groundwood pulp, as the name implies, is manufactured simply by grinding the wood logs to a pulp by mechanical abrasion. In a manner resembling the grinding of an axe, the logs are pressed firmly against the face of a huge revolving grindstone that grinds the wood away and separates it into individual fibers or bundles of fibers.

Because of this method of manufacture, the pulp contains all the materials that were present originally in the wood, including the lignin and pitch. The groundwood process and groundwood pulp are frequently known as the mechanical process and mechanical pulp.

In general, groundwood pulp is used only in the cheap, short-life grades of paper and paperboard, in which absorbency, printing surface, bulk, and opacity are the desirable characteristics, and in which color, permanence, and strength are relatively unimportant. Probably the best known and most widely used paper made from groundwood pulp is newsprint, on which newspapers are printed.

Chemical wood pulp is divided into three classifications: sulphite, soda, and sulphate, or kraft.

Sulphite pulp is produced from chips of wood in a process consisting essentially of cooking the chips in a sulphite acid within a large pressure digester under predetermined conditions of temperature and pressure for a definite period.

The cooking acid, composed of a dilute solution of calcium bisulphite in an excess of sulphurous acid, attacks and dissolves a major portion of the nonfibrous substances present in the wood, yielding sulphite pulp containing only a small amount of impurities. The sulphite process derives its name from the bisulphite part of the cooking acid.

The process is used principally on coniferous wood. The chips are steamed under 65 to 70 pounds pressure at about 145 degrees Centigrade for eight or nine hours. The substitution of sodium or potassium bisulphite for calcium bisulphite gives softer fibers and larger yields of cellulose, but the increased cost of these materials offsets the advantages gained.

Sulphite pulps are long-fibered and are used for writing, bond, ledger, and index papers.

Soda pulp production involves the digesting of chips cut from such trees as birch, beech, poplar, etc., in caustic soda solution at 160 degrees to 175 degrees Centigrade under 120 pounds pressure for six hours.

Soda pulp is soft and short-fibered without much strength, and therefore does not make strong paper. It is commonly used with sulphite for imparting bulk, opacity, smoothness, and uniform formation to papers used for printing purposes such as book, writing, cover and envelope.

Sulphate or kraft pulp is produced in a method that actually is a modification of the soda process. Instead of using sodium hydroxide as in the soda process, sodium sulphate is used in cooking the wood. Although any kind of wood may be pulped by the sulphate process, those chiefly used are pine, hemlock, balsam, Douglas fir, and poplar.

The chips are cooked at a pressure of approximately 110 pounds per square inch at a temperature of 172 degrees Centigrade for about four hours. The discoverer of the process found that the pulp produced was exceptionally strong; he therefore called it "kraft," which in Swedish means "strength."

Because of their long fibers and great strength, kraft pulps are used alone or in mixed furnishes in the manufacture of brown grocers' bags, wrapping, envelope, and gummed tape. They are also used extensively where absorbency is important, such as in paper toweling. Depending on color requirements of the finished product, kraft pulps are used in unbleached (brown), and fully bleached (white), and in semi-bleached in shades ranging from light brown to cream white.

Stem (bast) pulp is divided into the following classifications:

Flax pulp: Linen is the fiber obtained from the flax plant, which is cultivated in France, Ireland, Belgium, the Netherlands, Russia, Canada, and the United States. Flax plants have been found to contain 70 to 82 per cent cellulose between the bark and the woody tissues. Generally, linen fibers come to the paper mill in the form of linen cloth, and are processed similarly to cotton cloth to produce linen stock.

Hemp pulp: Many plants yield fibers to which the name hemp is given—Italian hemp, Manila hemp, sisal hemp, etc. They are approximately 65 per cent cellulose. The hemp that is used in papermaking usually comes from old ropes. When these ropes reach the mill, they are cut, dusted, sorted, washed, cooked, and bleached similarly to rags. The largest tonnage of this fiber goes into the manufacture of paper sacks for flour, cement, lime, and plaster.

Jute pulp: Jute fiber comes from the stem of the jute plant in India. The plant contains about 63 per cent cellulose and 24 per cent lignin. The plants are cut and steeped or retted in a pool of stagnant water. When the retting is complete, the bast layer, which is between the bark and the wood, is stripped off and washed.

It then goes to the textile mill, where the fiber is spun and woven into twine or burlap. Jute fiber therefore comes to the paper mill in the form of old sacking, burlap, and strip, and is used in the manufacture of wrapping paper, tag stock, and folders. It produces paper of excellent strength and durability.

The preparation of the pulp is, in general, similar to that of rag stock; that is, the jute is dusted, washed, cooked, bleached, and washed similarly to the preparation of rags.

Sugar cane (bagasse) and corn stalk: The crushed stalks of both sugar cane and corn have often been proposed as possible sources of cellulose and have been tried out in the production of pulp several times. They are first run through cutters and then cooked with caustic soda, washed, and bleached. The yield of pulp from the dry stalks, together with the fact that they produce weak and extremely dirty paper, makes these materials unsuitable for paper-making.

Straw pulp: Straw used in paper-making includes the stems and leaves of various cereals, with wheat and rye the best. They give the stiffness desired in corrugating paper. Oat and rice straws are also used. The straws are cooked with milk of lime for 10 to 12 hours at 40-45 pounds per square inch steam pressure. After cooking, the pulp is washed and is ready for use. One ton of dry wheat and rye straws yields about 70 per cent pulp.

Esparto pulp: This is especially suitable for book and writing papers and is used extensively in England. Esparto grass grows wild in Spain and Northern Africa (Tripoli), covering large areas near the coast. Esparto yields about 58 per cent cellulose. Like rag stock, it goes through the regular processes of dusting, washing, cooking, and bleaching in its manufacture into a desirable pulp.



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Paper-making

Steps in manufacture of printing papers include chipping, cooking, beating, calendering, coating, and the operation of the Fourdrinier Machine

Stanley Richardson

Most printing papers are made on the Fourdrinier paper-making machine. The process described below applies to these papers (coated or uncoated book, bond, ledger, writing, news, blotting, and cover papers). Bristols can be made on either the cylinder machine or the Fourdrinier. Blanks and boards are made on a cylinder machine, the wet end of which differs radically from the wet end of the Fourdrinier.

Chipping

Paper is made from cellulose vegetable fibers, essentially those obtained either from wood or rags. In the case of wood, logs are cut to chips for the chemical processes by revolving knives.

Cooking

The wood chips are then digested by cooking in a large tank under steam and pressure in a prepared chemical solution. This separates the cellulose of the wood from resinous portions that are dissolved out chemically.

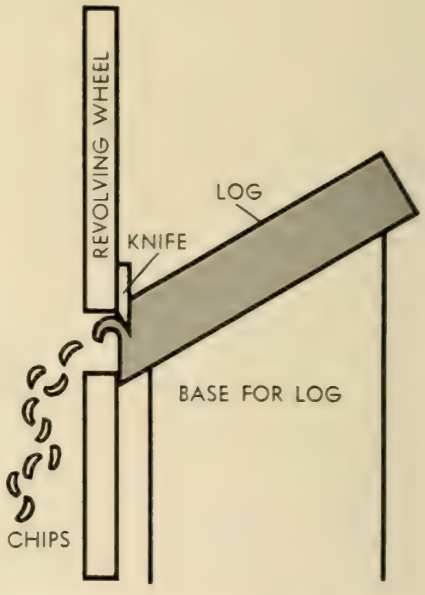
The different kinds of wood pulps depend upon the process employed: soda, sulphate, sulphite, and groundwood. The sulphate process produces kraft papers, used for wrapping papers, paper bags, etc. Sulphite pulp is strong, easily bleached, and is much used in writing, book, and magazine papers. Soda pulp is used in making soft and bulky book papers and for blottings. It produces short fibers and is used largely as a "filler" to provide a smooth printing surface.

When making rag paper, rags are sorted, dusted, boiled, washed, and bleached. Production from here on is similar regardless of whether rag or wood pulp is used in the process.

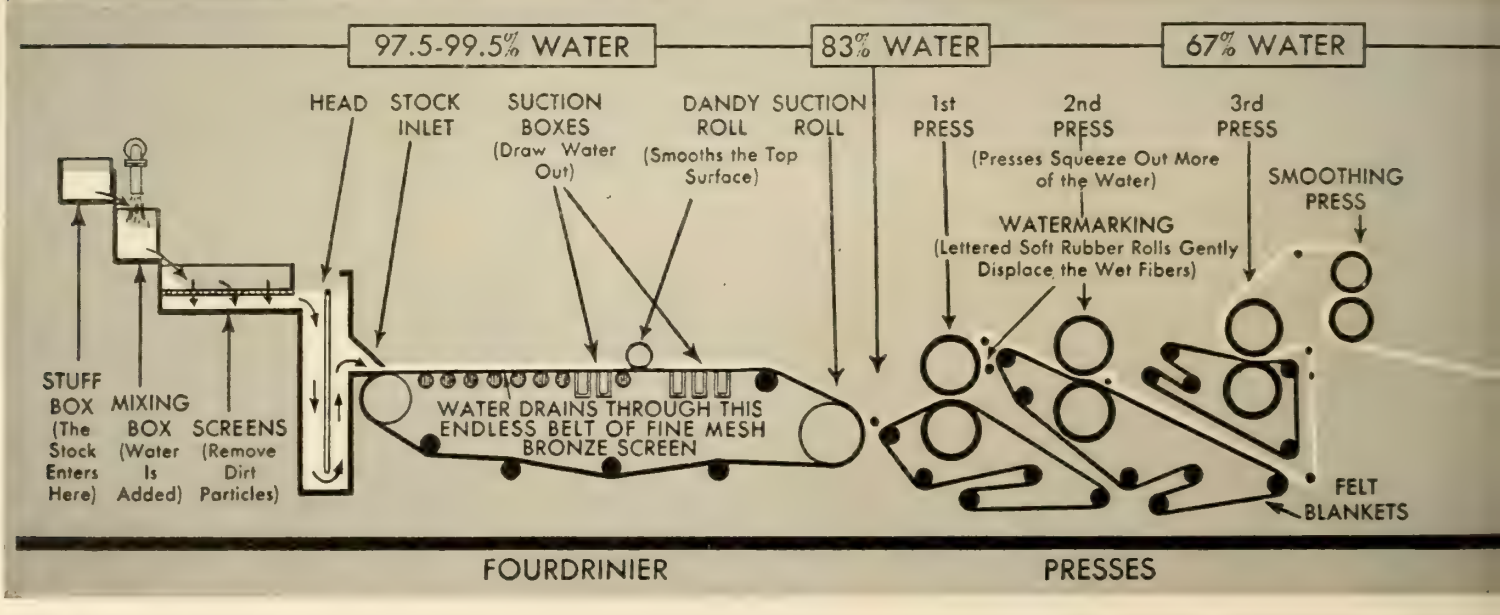
Beating

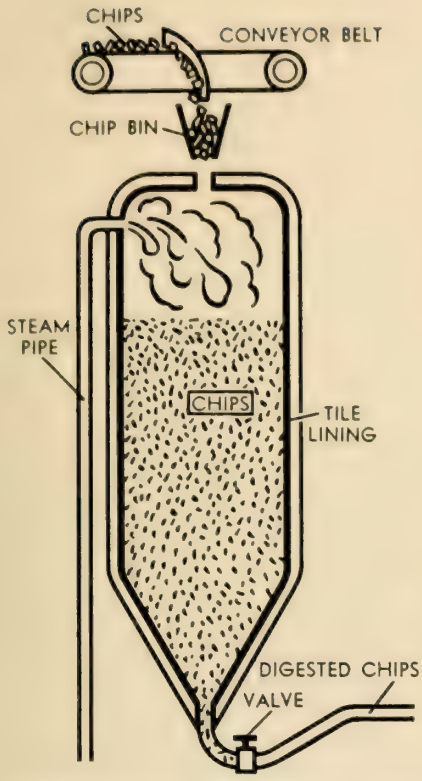
Beating produces hydration, which in turn breaks up the fibers so that they will enmesh easily when taking on sheet form. Pulp circulates in the beater tank between a revolving drum possessing blunt blades and a bed plate having corresponding blades or ridges.

Clay filler and titanium dioxide to give opacity, as well as dyes for color, gelatin, glue, starch, or rosin for sizing, and other materials essential to the making of the paper are here mixed with pulp. The flow of stuff on the machine (expressed as amount of stuff per second) and the length of time per beating and character of fiber determine the physical properties of paper, such as

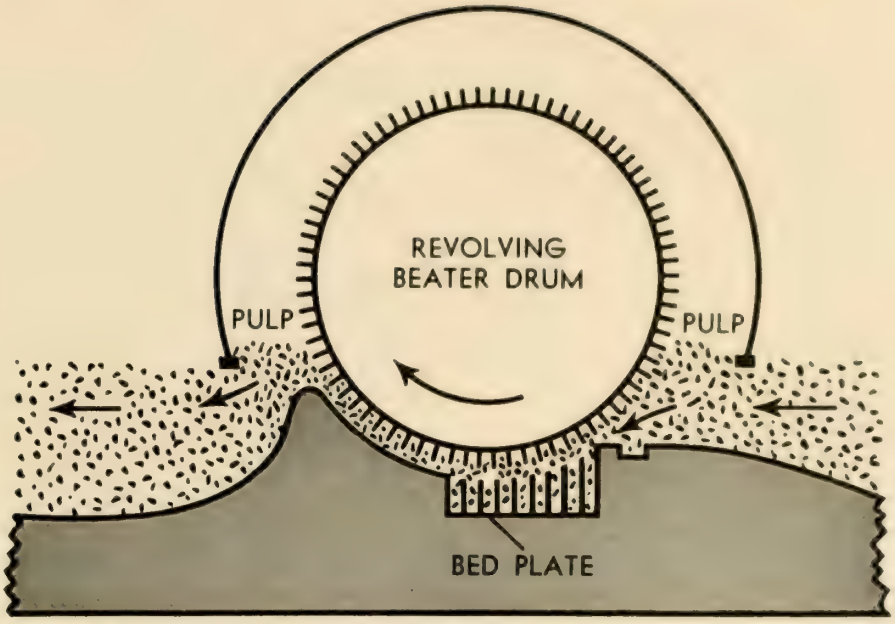


Chipping: The logs are cut to chips by knives.





Cooking: Chips are digested by steam cooking.



Beating: This produces hydration that breaks up the fibers so that they will enmesh in the sheet.

folding qualities, tear strength, density, and similar factors.

In some instances, additional refining is done in a Jordan engine. The Jordan is a conical iron cylinder (plug) revolving within a conical iron shell, both having blunt bars. The pulp passes through here and receives further refining treatment.

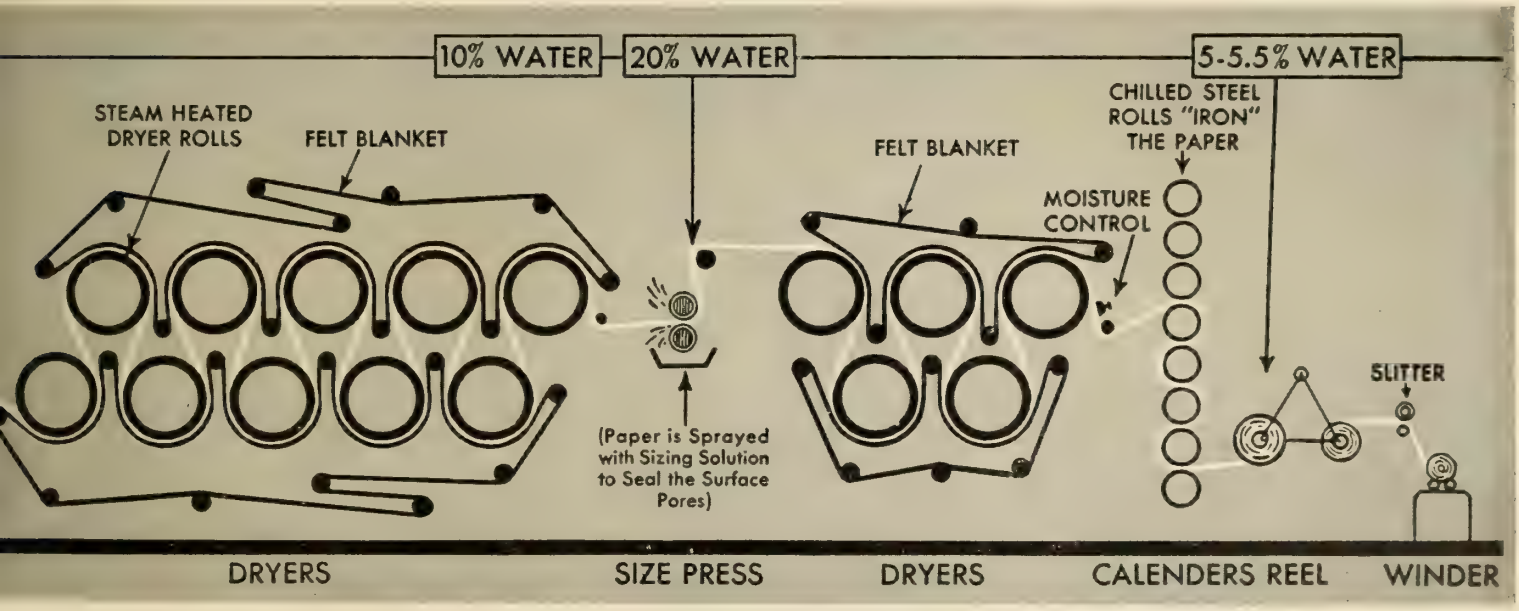
The degree of contact between the bars of the plug and those of the shell determines the fineness of the fiber. Pulp gets a further short beating, eliminating all bundles of fibers, to reduce the stock to a more or less uniform length to facilitate its forming on the paper machine. The Jordan machine is a supplementary refining process.

It also splits the ends of the fibers, facilitating the subsequent unmeshing; breaks up bundles of unsegregated fibers, and causes the fibers to accept the proper amount of water. The length and strength of the fibers also affect the tear strength of the sheet. The amount of sizing and the fiber formation affect the ability of paper to accept varnish.

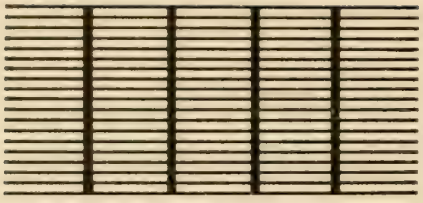
Fourdrinier

The beater pulp is fed to the stock chest at the wet end of the Fourdrinier. The pulp is then filtered through a rifler screen and on an endless screened belt that removes any dirt, lumps of clay, clotted fibers, or other foreign matter, and conveys pulp to a traveling and endless fine mesh woven wire screen (Fourdrinier wire).

As the pulp flows on the screen, it is shaken up, causing the floating fibers to intertwine and interlace. Their tendency to float in a lengthwise position gives the paper a grain direction. Should all



Simplified diagram of Fourdrinier Paper-Making Machine copyright Hammermill Paper Company. Reproduced with permission.



Laid design: Detail of the screen wire on dandy roll that gives paper web "laid" design.



Watermark: Detail of pattern on the dandy roll that impresses watermark on the paper.



Dandy roll: Paper web passes under roll to receive laid or wove pattern and watermark.

the fibers be positioned lengthwise, the strength of the paper would be greater one way of the sheet than the other. The vibrating motion of the wire tends to disturb this alignment and to effect a more strongly enmeshed paper web.

The web then passes under a skeleton cylinder known as a dandy roll. The dandy roll consists of either a wove or laid screen and the watermark screens or wires. As the paper passes under it, the laid or wove pattern and the watermark are impressed in the web. The edges of the web are less perfectly formed than the rest and assume a natural deckle. This impression is apparent when the paper is held up to the light.

Drying, calendering

Excess water is drained from the web as it passes over suction boxes and a series of steam-heated drier rolls. The web is thus dried, calendered (to give desired finish or gloss), and coated if so desired. Low finish papers such as newsprint may have very little calendering. Antique book paper will pass through relatively few calender rolls, or nips, and English finish or machine finish papers will pass through more.

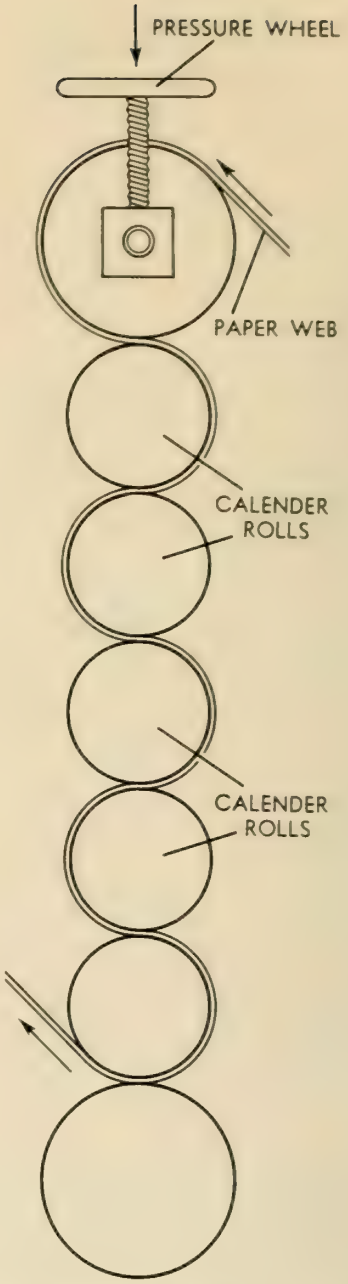
Supercalendering is a separate operation in which the paper passes through several nips. The roller pressure, heat from friction, and a steam shower affect the paper much as ironing affects starched cloth. After calendering and before rewinding or cutting into sheets, the web passes through a slitter that removes the unfinished (deckled) edges of the paper, giving even edges.

Coating

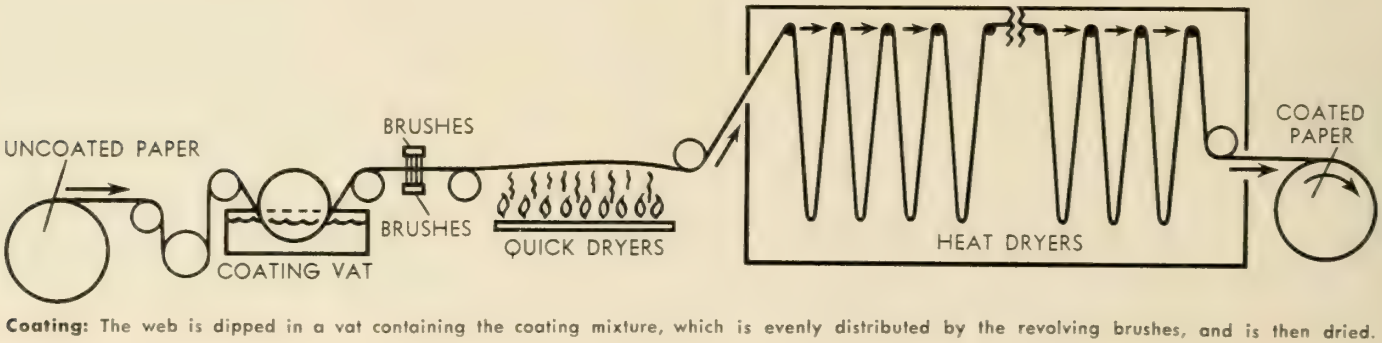
Coating can be done as part of the papermaking process by adding a unit to the Fourdrinier machine, or as a separate process on the finished web. The former produces what is known as machine or process coated paper. Pictured below is a typical separate coating process.

Coating serves to fill in the depressions between the fibers and gives a smooth printing surface to the sheet. The coating (clay, satin white, precipitated chalk, or blanc fixé) is mixed with an adhesive (casein, starch, glue) and with dye if to be colored.

The web is dipped into a vat containing the mixture and then is run through rollers with revolving brushes that evenly distribute the coating on the web. The paper then passes over heated driers and onto the festoons that pass through hot air driers. The paper, now coated and dried, is rewound in rolls, calendered, cut into sheets, packed, inspected, etc., and is ready for delivery.



Typical calendering machine: The paper receives its finish. The higher the finish desired, the more calendar rolls the paper goes through or the greater the pressure at the nips.



Coating: The web is dipped in a vat containing the coating mixture, which is evenly distributed by the revolving brushes, and is then dried.

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Paper surfaces

Microphotographs reveal effect of printing highlight, shadow areas; coated, super-calendered, machine finish, and newsprint surfaces analyzed

Clarence Monday

To obtain a brilliant, full-toned, and clean impression from a halftone plate, taking the ink from the top of the dot only, it is necessary to use a paper of great reflective power; smooth, even surface; and even body density. As these qualities deteriorate, so will the printed results deteriorate, in exact ratio.

Since the halftone screen performs the function of translating and converting continuous tones into relief printing surfaces, it is obvious that the finer the screen the nearer the approach to continuous tones. The 60-line halftone has 3,600 dots to the square inch —every one of which is an individual printing plate. The 150-line halftone contains 22,500 dots per square inch.

The distance between the dots in a halftone plate determines its depth. As the dots become more numerous, the distance between them is lessened and the depth is likewise reduced. A plate that is said to be too fine in screen ruling for a certain paper is likewise too shallow for that paper. For clean, sharp results, use the screen best suited to the paper and be sure it is coarse enough and therefore deep enough.

The highest reproductive or pictorial qualities are obtained by the use of the finer screens, 133 or 150 lines per inch for all practical purposes. These, however, can be printed effectively only on the best enamel or coated papers. The majority of the halftone illustrations in the PRODUCTION YEARBOOK were printed from 133-line plates, on a high grade coated paper.

The best mechanical qualities such as are required for electrotyping and printing are obtained by the use of the coarser screens, 120-line and downward, depending upon the surface and body of the paper to be used in printing.

When in doubt, the production man should use the coarser of two screens contemplated. To be safe, he should consult his photo-engraver before the plate is made, showing him a sample of the paper to be used. The photo-engraver will recommend the screen best suited to the paper and make the plates accordingly.

When a 120-line plate, for example, is printed on a smooth, hard coated paper, just enough impression is used for the paper to meet each dot lightly, the ink being transferred from the surface of the dots only. But if this same plate is printed on a rough paper, such as machine finish or newsprint, and pressure is used just sufficient to transfer the ink from the surface of the dots, then some of the dots will not print, because they do not come in contact with the low areas of the rough or uneven surface of the paper.

If the halftone plate, on the other hand, is sufficiently squeezed into the rough paper to make all dots touch, then excessive pressure is created on the high spots of the paper, causing the ink to spread and be taken from the sides of some of the dots. This will produce a heavy, muddy result.

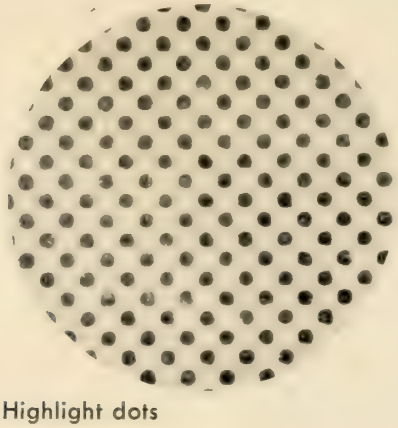
When a 65-line plate, for example, is used on a rough paper such as newsprint, the printing area of each dot is larger than in the finer screens, but the increased space between the dots will produce the desired comparative tones of light and shade, obviating the heavy muddy result produced by the finer screen on rough paper.

The circular illustrations accompanying this article are microphotographs of paper surfaces, ranging from a very smooth coated surface to the coarse newsprint surface, and impressions of halftone plates thereon. The same halftone plate was used throughout. The rectangular illustrations represent, by simplified concept, cross-sections of the paper surfaces showing the relative surface smoothness of the various types.

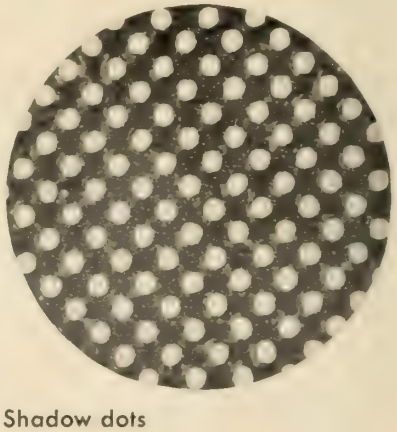
Coated



Coated paper surfaces



Highlight dots



Shadow dots

Modern PRINTING PAPERS

BONDS

Rag

Correct
Permanized Artesian
Permanized Cold Springs
Permanized Parchment
Permanized Plover
Wilson

Sulphite

Ariel
Cockletone
Hammermill
Management
Rego
Two Text
Union S
Whippet

OPAQUE

Ecusta Flaxopaque
Hammermill
Regopake
Permanized Artesian
Permanized Plover
Ti-Opaque
Titantex

LEDGERS

Rag

Franklin
Permanized Artesian
Permanized Cold Springs
Permanized Plover
Resistall

Sulphite

Hammermill
Hammermill Posting
Union S
Wytek

WRITINGS

Ecusta
Ecusta Airmail
Fineweave
Hammermill
Permanized Plover Letter

MIMEO-GRAPH and DUPLICATOR

Feedwell Mimeo
Hammermill Duplicator
Hammermill Mimeo

ONION SKINS

Permanized Cold Springs
Permanized
Permanized Plover
Titantex

MANIFOLDS

Bantam
Daily Sales
Patawite

SAFETY

Hammermill

BOOK

Coated

All Purpose CIS
Colorkote
Dullofold
Falcon
Hamilton
Kromekote, CIS
Satin Proof
Satin Refold

Process Coated

Mead's Process Plate

English Finish

Ecusta Flaxopaque
Garamond
Rego
Rego Tints
Ticonderoga

Antique

Ticonderoga

Text

Jesmore Text
Ticonderoga
Twintone

Bible

Ecusta Flaxopaque

Offset Plain

Hammermill
International
Rego
Wedgewood

Offset Coated

Wedgewood

COVER

Ariel
Cordwain
Crystallon
Daily Sales
Dura Glo
Hammermill
International
Interwoven
Kromekote
Marco
Marvelhide
Marvelleather
Metaloid
Riegel's Jersey
Rogers
Satin Refold Coated
Sulgrave Ant.
Ticonderoga Text
Twintone
Tuscan
Viking

INDEX

Rag

General
Guardian
Record

Sulphite

Beta
Daily Sales
Equator
Jefferson
Rogers
Springhill
Supply
Thrift

BRISTOL

Ausable
Franklin
Franklin Duplex
Hammermill
Indicator
Riegel's Jersey
Riverside
Rogers Folding
Stadium

Representing

American Writing Paper Corp.
L. L. Brown Paper Co.
Champion Paper and Fibre Co.
Chemical Paper Mfg. Co.
Dennison Mfg. Co.
Ecusta Paper Corp.
Falulah Paper Company
Franklin Paper Company
Hammermill Paper Company
International Paper Company
Marvellum Company
Mead Sales Company, Inc.
Mohawk Paper Mills
Peninsular Paper Co.
Plastic Coating Corporation
Riegel Paper Corporation
The Sorg Paper Company
Standard Paper Mfg. Co.
U. S. Envelope Co.
Whiting-Plover Paper Co.
Wrenn Paper Company

POST CARD

Uncoated

American Deeplake Cream
Canton Cream
National Cream

Coated

Campaign
Kromekote I side
Kromekote

BLOTTING

Blue Bird
Cosmos
Hi-Lustre
Metaloid
Porcelain Halftone
Record
Royal Worcester Enamel
Sterling
Standard Embossed
Standard, Royal
Wrenn's Embossed
Wrenn's Enamel

TAG

Imitation Press Board
Riegel's Jute
Sorex Manila
Sorex White
Springhill Manila
Springhill White

BLANKS

Coated

Faultless
Railroad

Uncoated

Patent Coated
Rego

PRESS ROOM SUPPLIES

Ecusta Make Ready
Riegel's Tympan

MISC.

Ecusta Silver Tissue
Envelopes
Keebord

REINHOLD-GOULD, INC.

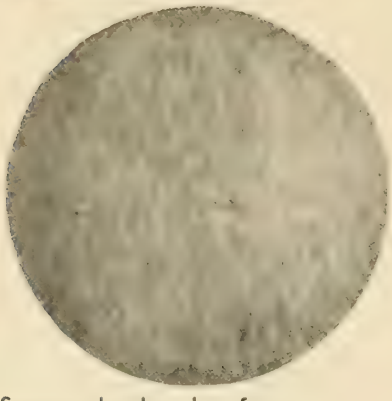
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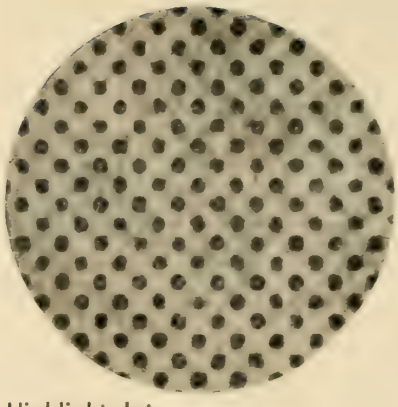
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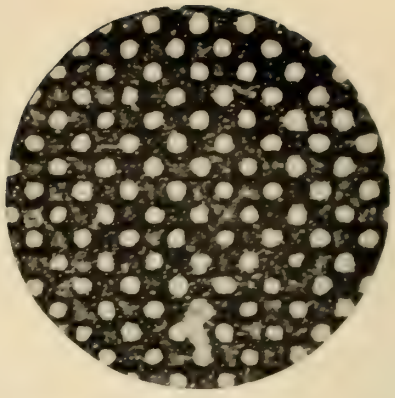
Super-calendered



Super-calendered surface

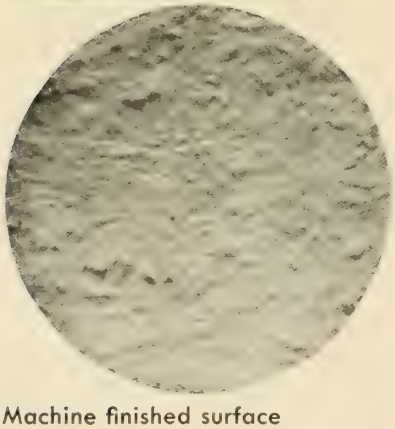


Highlight dots

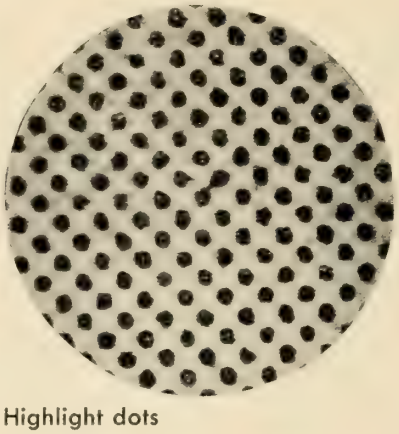


Shadow dots

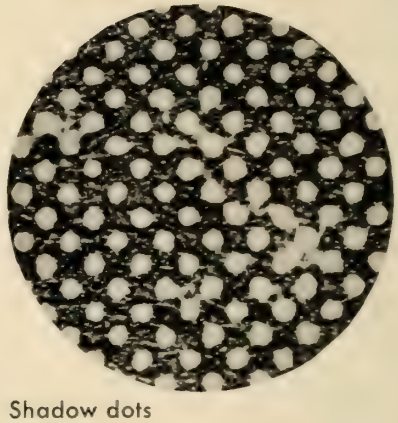
Machine finish



Machine finished surface

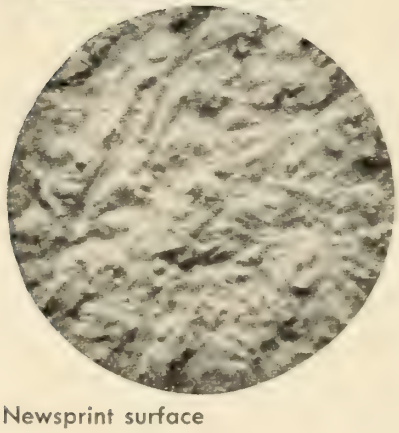


Highlight dots

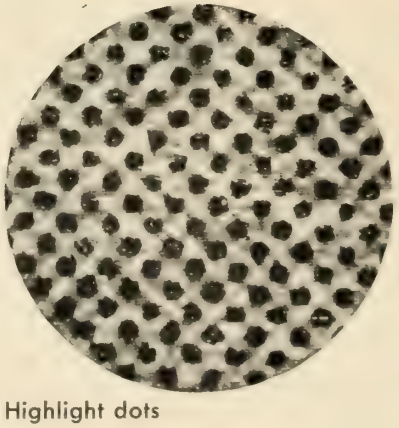


Shadow dots

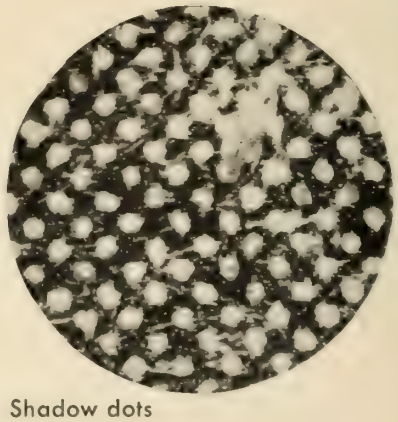
Newsprint



Newsprint surface



Highlight dots



Shadow dots

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grind the fibre, beat the pulp, run the raw stock, dry it,
and cut . . . the railroads and the trucks that deliver
. . . all bring to you the papers that print and serve

from

Albemarle Paper Mfg. Co.
Allied Paper Mills
American Writing Paper Corp.
L. L. Brown Co.
Martin Cantine Co.
Chemical Paper Co.
Collins Manufacturing Co.
Consolidated Water Power Paper Co.
Crocker McElwain Co.
Dennison Manufacturing Co.
Eastern Corporation
Franklin Paper Co.
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International Paper Co.
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J. P. Lewis Paper Co.
Lowe Paper Co.
Miami Valley Coated Paper Co.
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Plastic films

New packaging materials require inks that have a binder of the same kind of resin as the film to be printed, as well as a volatile solvent

Robert P. Long

Although cellophane and acetate films have been used for packaging, specialty advertising, and other printed products for some years, many new plastic materials are now coming into use that are unfamiliar to the average lithographer or printer.

These new materials include such films as polyethylene, ethyl cellulose, the vinyls, Pliofilm, Saran, (registered trademarks) and the polyvinyl alcohols. Some of these are so new that attempts to print on them are in laboratory stage.

A different principle is involved in printing on these surfaces than that dealt with in printing on paper or metal. The inks used in printing on a plastic film surface contain a binder of the same general type of resin as the film to be printed.

The ink also contains a volatile solvent that softens the film so that the pigmented binder becomes welded to it. When the surface dries, the ink becomes a part of the film and has the same resistance characteristics as the film. This process is limited, of course, to those films for which suitable solvents have been found.

Most of the printing being done on these newer films, up to now, is by the gravure and the silk screen processes. Aniline printing (from rubber plates), widely used for cellophane and cellulose acetate, has so far proved practical for only a few of the newer films.

Lithography and typographical printing are used in some cases, but both are somewhat limited at present. Some expect that there may be further development in the printing of plastic films by dry offset, which makes use of a relief plate-offset method without the necessity of water rollers.

These films are generally considered as material not exceeding .005 inch in thickness. Materials exceeding this thickness are classed as sheets or sheeting. As thicknesses increase, the problems involved change rapidly. Herewith are some of the problems involved in printing on some of these newer films (those up to .005 inch in thickness).

Polyethylene

Polyethylene (or polythene, as some call it) is not yet widely used in packaging or printing. The term polyethylene is the generic name for those polymers of ethylene that are suitable for application as plastics. The name is not a trade-mark.

This plastic has a range from hazy to translucent, has outstanding water-vapor resistance, and inertness to chemical reagents. However, this film has poor resistance to gas penetration, and is permeable by organic acids as well as by essential oils and flavorings.

Polyethylene makes an ideal packaging material for frozen foods, as its low temperature brittleness point is below —70° Centigrade (—94° Fahrenheit). Tear resistance is excellent at both freezer and room temperatures. The same characteristics are not present at high temperatures, and polyethylene begins to flow at about 100° Centigrade (212° Fahrenheit), the boiling point of water.

Successful letterpress printing on this film was reported first in December, 1946, when fairly good adhesion between ink and film was obtained. More research and experiment is needed to make this adhesion more permanent to meet severe packaging requirements. A solvent is needed that will dissolve the film surface momentarily at working temperatures so the ink can become an integral part of the film.

Gravure is at present the most promising method of printing on this film, as laboratory runs on textile print machines produce excellent one-color ink bonding. No difficulty is anticipated in developing inks for multicolor work. Commercial intaglio printing on polyethylene was scheduled to begin about May of this year.

Silk screen is currently being used with oil inks, the success varying with the specifications required. Silk screen ink bonding appears to be entirely satisfactory for light duty, but might not meet rough handling requirements.

Lithography and aniline have not yet been reported as successful on this film. However, a branch of lithography, decalcomania, is now being employed for use on polyethylene. One Brooklyn company is offering decalcomanias for use on this film, and claims a rapid and economical method of application.

Ethyl cellulose

Ethyl cellulose film has many of the characteristics of cellulose acetate film, but has not been used extensively as a film material. Polished ethyl cellulose film has been printed satisfactorily by silk screen, with good adhesion being obtained, although the inks lack gloss.

Not much difficulty is anticipated in printing this film by gravure should the film find a general use requiring printing. Laboratory tests have shown good adhesion of inks.

Ethyl cellulose is one of the new plastic films that is soluble in aniline solvents. The stock swells under printing, however, and good results are obtained only from small patterns. When large, irregular areas of the surface are printed, the film may become warped. However, solid coating work has been done satisfactorily, since any swelling is uniform throughout the sheet.

The vinyls

The term vinyl refers particularly to the copolymers that are tough and waterproof. Calendered vinyl films have gained wide popularity as shower curtains, bowl covers, and aprons. The recent perfection of a thin cast film indicates wider use in packaging.

So far there has been little or no successful printing on vinyl copolymer by lithographic, letterpress, or aniline processes. However, as demand for cast films increases in the packaging field, development of these processes for printing on the film will be greatly stimulated in a wide number of directions.

The silk screen process is particularly well suited to vinyl films when inks con-


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taining compatible resins are used. Such inks become an integral part of the film and achieve excellent results from the standpoints of appearance and resistance to rub-off.

Calendered vinyl films are now being printed in considerable volume by gravure. In all probability, newer cast material can be printed by gravure with even better results than are obtained on the calendered films at present.

Pliofilm

Pliofilm (a registered trade-mark) is a modified rubber (addition) product and is very stretchy. It is heat-sensitive and readily distorted by solvents. In the thicknesses up to .005 inch, Pliofilm does not have the sparkle of acetate and cellophane, so it is used where its superior resistance to moisture-vapor transmission or to grease and water are required.

Its surface is soft and easily marred. The ink, which has similar characteristics when it becomes an integral part of the Pliofilm, will also show marks readily. Some cigarette manufacturers are using Pliofilm, and bonding inks have been formulated so that state tax stamps may be printed on either cellophane-wrapped or Pliofilm-wrapped packages with equally good adhesion.

Gravure is still the most successful process for printing on Pliofilm, and good results are being produced. Special inks have been formulated that withstand the effects of fats, oils, and water. An active solvent is needed to bind the ink to the film, but only a minimum of heat is needed.

Little printing, other than experimental, has been done on Pliofilm by silk screen. No serious difficulties have been met, and inks for such printing can be supplied.

Aniline printing has not been very successful until recently, when new ink formulas were developed which met practically all package printing requirements. Tests run uncovered no major problems; and the new inks are expected to give a wider latitude in aniline color selection as well as a dependable bonding of ink and film.

The stretchiness of Pliofilm demands adhesive and flexible ink—requirements that are easily met by the aniline process.

The rubbery nature of Pliofilm does not adapt it to letterpress, while the problem of hygroscopic solvents has prevented successful lithographic printing on this material in tests made to date.

Saran

Saran (a registered trade-mark) is the most resistant of all transparent films to moisture-vapor transmission. It also has excellent strength. Originally, this film carried on its surface a plasticizer with a characteristic odor and greasy feel that limited its use for many applications.

However, a new Saran was introduced at the 1947 Packaging Exposition. It is a clear, high gloss, transparent, flexible, tasteless, and odorless oriented type of film. With these qualities, this newcomer will probably find wide use.

Saran is a polyvinylidine chloride plastic film. What has been said of the printing of vinyl films by silk screen would also be true for Saran. Only laboratory tests have been made in connection with the printing of Saran by gravure. No serious difficulties have been experienced in obtaining good adhesion.

For the aniline printing process, Saran provides an excellent printing surface. The solvent does not attack rubber plates or rollers and is very effective on Saran film. Excellent results have been obtained with a wide variety of aniline colors.

The new Saran is one of the few plastic films that have proved suitable for letterpress printing. With rubber plates and special solvents to prevent the ink from drying on the press, excellent adhesion and appearance have been achieved. Results of letterpress printing closely resemble those produced by aniline.

Saran-coated cellophane is another type of film that recently has come into prominence because its water-vapor resistance is not disturbed by packaging machinery. This type of film can be printed by the aniline process with results as good as those obtained on the regular Saran film.

Polyvinyl alcohols

Polyvinyl alcohol film has high tear resistance and is inherently resistant to grease, oils, solvents, and gases. It is water soluble, however, and thus is limited to applications where this factor will not matter. Because of this important limiting factor and the recent development of this type of film, few, if any, attempts have been made to test its printability.

As can be seen from this discussion, the problems of printing on most of these newer films are scarcely out of the laboratory stage. But as new uses develop for the films, there will be increasing demands for printing on them, and the printing techniques necessary will improve as the films' usage expands.

Lithography, which has found wide utility in the printing of cellophanes and acetates, may attain a broadening role as further work is done with the newer plastics. But some of the main difficulties revolve around the requirements inherent in inks for use in the lithographic process.

The presence of water on the lithographic plate is a limiting factor in the type of inks that may be used. Dry offset may be the eventual answer, for the rubber blanket used in the offset process provides a logical means and an economical rotary method of transferring the ink to the plastic film.

Editor's note: In addition to the plastic films described above, other forms of plastic material are used in packaging and printing. Each form and kind of plastic presents its particular decorating problems.

Plastics are available as sheets (thicker than .005 inch), rods, tubes, and a variety of molded shapes as well as film. The permanency of the overall color of plastic materials, as well as their excellent adaptability to many packaging problems, has increased interest in how to best decorate them.

Among the methods used are electroplating, spraying, vacuum deposition, chemical reduction methods, pantographic engraving, acid etching, hand applied color, metal inlaying, and roll leaf hot marking. The conventional printing methods described in this article can also be used in some instances, with silk screen being particularly adaptable where molded containers and curved surfaces are to be decorated.

Machine tools can be used to carve designs in the material. Sandblasting or airblasting can be used to roughen up a too-smooth surface. Lettering and designs can be embossed or molded into the container when it is being formed.

These are but some of the methods used to decorate plastic materials. The effectiveness and practicability of each method varies from material to material. The production man who is used to the conventional printing processes and to printing papers but is not experienced in the decorating of plastics should be sure to deal only with these suppliers who are experienced in the field and on whose advice they can depend.



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Aluminum foil

Thin, light-weight metal stock can be embossed, laminated, gummed, printed in full color; highly adaptable for packaging; available in sheets or rolls

L. E. Louden

Aluminum, the world's third most abundant element, has, through its versatility, been adapted into metal foil. A great deal of research has been done in an effort to perfect uniform, thin gauges of foil, used widely for packaging foods, confections, cosmetics; for decorating motifs and designs; for labeling; and for use as household foil in the wrapping of foods for storage in the refrigerator or home freezer. Furthermore, it is used not only to package a product but to increase its saleability.

Packaging qualities

Since aluminum foil is a solid sheet of metal, it is moisture-proof, vapor proof, odor-proof and water-repellent. Containers made with foil weigh less, are less bulky, and cost less in the long run to manufacture and transport. At present, aluminum foil can be rolled so thin that one pound spreads over an area of 60,000 square inches. Methods of laminating foil to paper, plastic film, cellophane, cloth, and other materials are creating new markets in fields of industry, art, and food.

The use of foil adds distinction and attractiveness to any label or package. The foil label has a definite functional value in that it resists moisture, which often loosens other labels from packages, cans, and bottles.

The toiletries and cosmetics industry also has discovered foil. Aside from its attractive appearance and adaptability, foil withstands rough and frequent handling. The confectionery field makes use of embossed spot labels of foil in natural finish or gold lacquer printed in colors for boxed and other packaged assortments. In packaging confections, the protective features of aluminum foil preserve the vitamin content, keep the product fresh, and make possible shipment over wide areas.

Aluminum foil takes color printing, especially rotogravure. Brilliance of foil emphasizes line drawings, and outlines and spotlights the product's name. It can be printed or embossed on various degrees of thickness or finish. Gumming, printing, and embossing are frequently done by different organizations.

Artists working directly on aluminum foil in many cases use ox gall. Others prefer to wet the surface with a piece of cotton saturated in a mild salt solution. Generally, however, working on aluminum is the same as on other art plates.

Printing processes used

From the production standpoint, any subject that lends itself to foil printing can be used. Highly recommended procedures are gravure, silk screen, and rubber plates. Printing on foil can be done by letterpress, lithography, or gravure. The printing processes have become an extremely important factor in widening the decorative usefulness of this type of material for packaging. Foil design can be produced in two types of finishes, bright and mat, but either of these may be combined with an almost limitless variety of colors by means of transparent and opaque inks.

The greatest progress in methods of printing foil is being made in the field of rotogravure. Presses now can turn out seven-color process work on foil stock at the rate of 400 feet a minute, applying colors at different press stations during only one press operation.

Kodachromes reproduced

Kodachrome illustrations also are reproduced by similar methods on a foundation color of opaque white as expertly as on any other type of printing. This can be contrasted with the brilliant effect of natural aluminum or gold-lacquered surface. Illustrations are produced by means of rotogravure screen, with the line copy also screened.

Manufacturers of foil have developed many products and techniques for its use and application that are of interest to advertising production men. Some of these, developed by the Reynolds Metals Company, are described, as follows:

Reyseal, used as an over-wrap in the packaging of frozen food and many other products. Laminated to a base paper with glue adhesive and special wax, the Reyseal package keeps frozen food fresh and moist longer.

A new type of butter wrap, a lamination of foil and parchment paper that makes a neater package, adds to merchandisability of butter, and preserves weight, flavor, and score twice as long as butter in ordinary wrappers.

There is also a single unit package with no inner linings or outer wraps, that soon will be used in the packaging of frozen foods. It cuts freezing time one-third to one-half, reduces machine operations, saves labor, and cuts production costs.

Designs in full color are printed directly on the aluminum by means of special process, using both transparent and opaque inks. Techniques in the application of aluminum foil have progressed to such an extent that foil material is available in specifications to meet the exacting needs of almost all types of existing packaging machinery. It has been developed in sheet or roll form that can be printed, and with electric eye cut-off for automatic packaging. It can be heat-sealed, crimped, or folded.

Fast-drying inks

With the fast-drying inks, no wash-up is needed in the printing operation. In die-cutting, the edges cut better than on plain paper, and there is no tearing or crimping as on straight paper. The process is automatic, with no hand operation needed. The printed foil acquires a non-crystallizing, non-smearing, dry-hard finish which is extremely resistant to rubbing and smearing. The printing is sharper and there is no danger of bleed or spread.

Because foil combines eye appeal with utility in packaging, it is being increasingly used both by new manufacturers and by manufacturers who have been acquainted in the past with its use and who are applying it to additional merchandise in the latest modern dress.

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Paper thickness calculator

A simplified comparison of the average thicknesses of the standard weights of book and writing papers, bristols, indexes, blanks, and covers

Howard Ingram

Chart 1: 9-pound bond to 90-pound book paper: two sheets calipered

	4	5	5½	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	12	12½	13	13½	14	15	16	18
Bond 17 x 22	9	13		16			20		24			28											
Ledger 17 x 22						20			24		28			32				36					
Vellum 17 x 22								20			24			28		32			36		40		
Mimeo 17 x 22						16			20						24			28					
Super 25 x 38		50		60		70		80															
E. F. 25 x 38	30	40	45		50	60			70				80										
Coated Book 25 x 38			60			70		80			90												
Coated Offset 25 x 38							70		80														
Antique Book 25 x 38										50		60				70				80			
Bulking Book 25 x 38												45		50					60			70	80
Litho C 1 Side 25 x 38			50		60			70		80													
W.W. Offset 25 x 38						50			60			70					80						

Chart 2: 100-pound book paper to 8-ply blanks: one sheet calipered

	5	5½	6	7	8	8½	9	9½	10	10½	11	11½	12	12½	13	13½	14	15	16	17½	18	19½	24	28	30
Coated Book 25 x 38	100		120																						
Wove Offset 25 x 38				100				120				150													
Ant. Text 25 x 38					100										160										
Plate Text 25 x 38		100						160																	
Ant. Cover 20 x 26	40			50			65						80					100			130			160	
Coated Cover 20 x 26			60		80				100																
Index Bristol 20½ x 24¾				58½	72								91					111			143				
Ant. Bristol 22½ x 28½										100					120				140	160		180			
Plate Bristol 22½ x 28½						100			120				140				160		180						
Tags 24 x 36	80			100		125				150			175		200					250			300		
Blanks 22 x 28-Ply													2					3			4		6		8

The above easy-to-use paper thickness charts afford a simplified comparison of average thicknesses in standard weights of paper, bristol, index, and blank. Caliper readings are given in 1/1000 of an inch, and all weights given are in reams.

How to use: To determine the caliper thickness of 72-pound index Bristol, read right from the index classification to the 72-pound weight. The figure at the top of the column shows the thickness to be 8/1000 inches (or 8 points). To determine other grades of paper having the same thickness, read up or down the same column to other figures, and across to left to paper grades.

Other readings in the same column in this example show that 80-pound coated cover and 100-pound antique text paper also measure 8/1000 inches. Quick comparisons of identical thicknesses indicate adequate substitutes when specific paper is not immediately available. Columns have been eliminated where there is no identical thickness.

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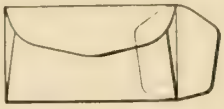
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Envelope sizes and styles at a glance



Bank

No.	Size
5	3¾x5¾
6	4⅛x6¼
6¼	4½x6¼
6½	5 x6½
6¾	4½x6⅝
7	4⅜x7⅛
7½	5 x7
8	5 x7½
8½	5½x7½
8¾	5½x8
8⅞	5½x8¼



Booklet

No.	Size
1	3¾x6¾
2	4 x5⅜
2½	4½x5⅞
3	4¾x 6½
4	4¼x 9⅝
5	5½x 8⅛
6	5¾x 8⅞
6½	6 x 9
7	6¼x 9⅝
7½	7½x10½
8	8 x11⅛
9	8¾x11½
10	9½x12⅝



Coin

No.	Size
00	1 11/16x2¼
1	2¼x3½
3	2½x4¼
4	3 x4½
4½	3 x4⅞
4¾	3⅛x4¾
5	2⅞x5¼
5½	3⅛x5½
6	3⅜x6
7	3½x6½



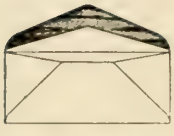
Coupon

No.	Size
6¼	3½x6
6¾	3⅝x6½



Pointed flap

No.	Size
	3⅜x5⅜
	3½x6
	3 9/16x5 9/16
	3⅝x6½
	3⅞x7½



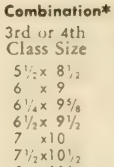
Bankers flap

No.	Size
7¾	3⅞x 7½
9	3⅞x 8⅞
10	4⅛x 9½
10½	4½x 9½
11	4½x10⅜
12	4¾x11
14	5 x11½
16	6 x12



Catalog

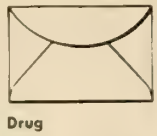
No.	Size
1	6 x 9
1¾	6½x 9½
3	7 x10
6	7½x10½
8	8¼x11¼
10½	9 x12
12½	9½x12½
13½	10 x13
14½	11½x14½



Combination*

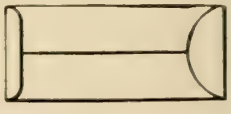
3rd or 4th Class Size	1st Class Size
5½x 8½	3⅝x6½
6 x 9	3⅝x6½
6¼x 9⅝	3⅝x6½
6½x 9½	3⅝x6½
7 x10	3⅞x8⅞
7½x10½	3⅞x8⅞
8 x11⅛	3⅝x6½
8¼x11¼	3⅞x8⅞
8¾x11¼	3⅞x8⅞
8¾x11½	4⅛x9½
9 x12	3⅞x8⅞
9¼x14½	3⅞x8⅞
9½x12½	3⅞x8⅞
9½x12⅝	4⅛x9½
10 x13	3⅞x8⅞
10½x14	3⅞x8⅞
11½x14½	3⅞x8⅞

*Most 1st class styles are also obtainable with a window.



Double negative

No.	Size
	4½x6⅜
	4½x6¾
	4¾x6¾

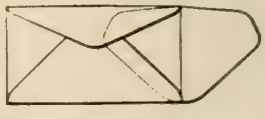


Policy

No.	Size
9	4 x 9
10	4⅛x 9½
11	4½x10⅜
14	5 x11½

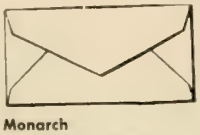
Drug

No.	Size
1	1¾x2⅞
2	2 1/16x3½
3	2 5/16x3⅝



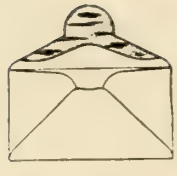
Postage saver

No.	Size
5	3 1/16x5½
6¼	3½x6
6¾	3⅝x6½
9	3⅞x8⅞
10	4⅛x9½
11	4½x10⅜
12	4¾x11
14	5 x11½



Monarch

No.	Size
	3⅞x7½



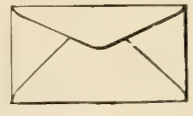
Bankers safety

No.	Size
6¼	3½x6
6¾	3⅝x6½
9	3⅞x8⅞
10	4⅛x9½



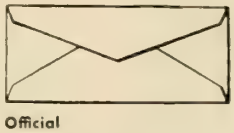
Clasp

No.	Size
0	2½x 4¼
5	3⅛x 5½
10	3⅜x 6
11	4½x10⅜
14	5 x11½
15	4 x 6⅜
25	4⅝x 6¾
35	5 x 7½
50	5½x 8¼
55	6 x 9
63	6½x 9½
68	7 x10
75	7½x10½
80	8 x11
83	8½x11½
87	8¾x11¼
90	9 x12
93	9½x12½
94	9¼x14¼
95	10 x12
97	10 x13
98	10 x15
105	11½x14½
110	12 x15½



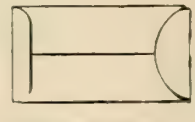
Commercial

No.	Size
5	3 1/16x5½
6¼	3½x6
6¾	3⅜x6½



Official

No.	Size
7	3¾x 6¾
7¾	3⅞x 7½
8⅝	3⅝x 8⅝
9	3⅞x 8⅞
10	4⅛x 9½
11	4½x10⅜
12	4¾x11
14	5 x11½



Round flap glove

No.	Size
6¾	4 x6
7	4 x6⅜
7½	4 x7
8	3⅞x7½



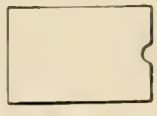
Baronial

No.	Size
4	3⅝x4 11/16
5	4⅛x5⅛
5 Card	4¼x5½
5⅛ Card	4½x5¾
5½	4¾x5⅝
5¾	4⅝x5 15/16
6	5 x6

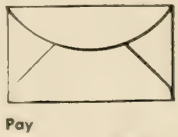


Confectionery bag

No.	Size
1 oz.	3¼x4½
2 oz.	3¾x5
¼ lb.	4¼x6¼
½ lb.	4⅞x7⅛
1 lb.	5¾x8¾
2 lb.	6¾x9½



Pass book



Pay

No.	Size
2	2½x4¼



Safety fold

Size
4½x 9⅝
5 x11
5 x11½
5½x11½
6 x12

Requirements of Fine Envelopes . . . *presenting a background of U. S. E. experience and craftsmanship and the resultant quality that is built into envelopes.*

STANDARDIZATION in envelope manufacture had its real beginning in 1898 when the United States Envelope Company began pooling the knowledge and resources of member companies. Envelopes were given definite sizes and designs. Different adhesives were selected for various types of paper. New materials, methods, and machines replaced the old, and an over-all high degree of quality resulted.

From this beginning, U.S.E. has moved steadily forward. As needs have grown, production has increased, until today we have a new high standard in the manufacture of envelopes and a sound approach to a big market.

Paper

All envelopes of standard size and shape may look alike, but they're not alike. A fine envelope is made of fine paper — made and tested to definite specifications. U.S.E. laboratory technicians constantly check each of the general types of envelope paper — Kraft, Manila, White Wove, Bond — for tensile strength, folding qualities, color, printing surface, texture. . . .

Gumming

Because different stocks, surfaces, and color react differently to various types of gums, no one standard gum can be used effectively for all envelopes. Even the gum used on the seams of an envelope is not the same as that used on the flaps. Because of these differences, U.S.E. uses a variety of gums most suitable for each of its different types of standard papers.

Packing

U.S.E. constantly maintains the practice of packing envelopes in set-up boxes. These, in turn, are shipped in corrugated cartons. Envelopes are marked off in even quantities, and a printed guarantee is placed in every box.

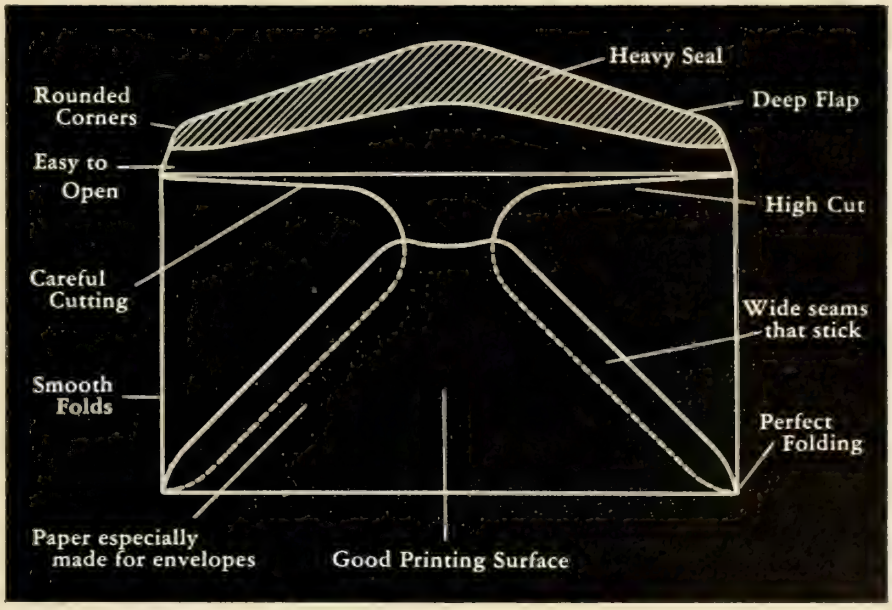
Inspection

Though an envelope is merely a piece of paper — cut, gummed, folded and sealed — it must be accurate within literally fractions of an inch. U.S.E. inspectors are constantly watchful. Even the smallest details must meet rigid specifications or the envelope is rejected, for U.S.E. quality is as close to perfection as human ingenuity can make it.

This correctness of manufacture, that has identified U.S.E.-made envelopes for nearly a half-century, has been of ever-increasing importance to printers and merchants alike. The maintenance of this uniform quality is, and will continue to be, their guarantee of reliability.

UNITED STATES ENVELOPE CO.

General Offices: SPRINGFIELD 2, MASS.



Diagrammatic view of an envelope blank, gummed and folded, as made by the United States Envelope Company, showing the outstanding characteristics that identify this quality-made product.

Envelope sizes from smallest to largest, continued



Safeway mailer

No.	Size
S-63	6¾ x 9½
S-75	7¾ x10½
S-83	8¾ x11½
S-93	9¾ x12½
S-97	10¾ x13½
S-105	11¾ x14½
S-110	12¾ x15½



Self seal

No.	Size
6¼	3½ x6
6¾	3⅝ x6½
7¾	3⅞ x7½
9	3⅞ x8⅞
10	4⅛ x9½



Side seam open end

4	x 6¼
4¼	x 7½
4⅜	x 7½
5	x 7½
5½	x 7½
5½	x 8¼
6	x 9
6¼	x 9¼
6¼	x 9½
6½	x 9½
7	x10
7	x10½
7½	x10½

Square flap officials (Cont.)

No.	Size
9	3⅞ x 8⅞
10	4⅛ x 9½
10½	4½ x 9½
11	4½ x10⅜
12	4¾ x11
14	5 x11½
16	6 x12



Wallet flap

Size
3⅜ x5⅛
3½ x6
3⁹⁄₁₆ x5⁹⁄₁₆
3⅝ x6½
3⅞ x7½



String & button
(Same as Clasp)



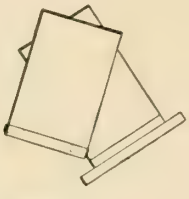
Window (1 piece)

No.	Size
6¼	3½ x6
6¾	3⅝ x6½
7	3¾ x6¾
7¾	3⅞ x7½
Check	3⅝ x8⅝
8¼	3⅝ x8¾
9	3⅞ x8⅞
10	4⅛ x9½



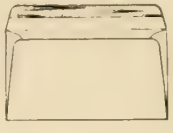
Scarf

No.	Size
1	4⅝ x6¾
3	5 x7½
4¼	5½ x7½
6	5½ x8¼



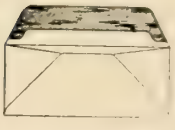
Security ore

2½	x4½
3	x5
3½	x6
4	x7
4½	x8
5	x9



Souvenir

No.	Size
6¼	3½ x6
6¾	3⅝ x6½



Square flap officials

No.	Size
7¾	3⅞ x7½



Typewriter

No.	Size
6¾	3⅝ x6½
9	3⅞ x8⅞
10	4⅛ x9½



Window

No.	Size
(6¼ to 10 as above)	
11	4½ x10⅜
12	4¾ x11
14	5 x11½

Envelope sizes from smallest to largest

Size	Opens at	No. and style
1 11⁄16 x2¾	End	00 Coin
1¾ x2⅞	Side	1 Drug
1 15⁄16 x4 7⁄16	Side	3 Theatre
2 x2	Side	Optical
2 1⁄16 x3½	Side	2 Drug
2⅛ x2⅛	Side	Lens
2¼ x2¼	Side	Toric
2¼ x3½	End	1 Coin
2 5⁄16 x3⅝	Side	3 Drug
2½ x4¼	End	3 Coin
	End	0 Clasp
	End	0 String & button
	Side	2 Pay
2½ x4½	End	Security ore
2⅞ x5¼	End	5 Coin
3 x4½	End	4 Coin
3 x4⅞	End	4½ Coin
3 x5	End	Security ore
3 1⁄16 x5½	Side	5 Commercial 5 Postage saver Wallet flap
3⅛ x4¾	End	4¾ Coin
3⅛ x5½	End	5 Clasp 5 String & button 5½ Coin
3¼ x4½	End	Confectionery bag
3⅜ x5 3⁄16	Side	Pointed flap Wallet flap
3⅜ x5⅜	Side	Wallet flap
3⅜ x6	End	6 Coin 10 Clasp 10 String & button
3⅜ x6	End	6¼ Bankers safety 6¼ Commercial 6¼ Coupon Pointed flap 6¼ Postage saver 6¼ Self seal 6¼ Souvenir Wallet flap 6¼ Window 6¼ Window (1 piece)
3½ x6½	End	7 Coin Security ore
3 9⁄16 x5 9⁄16	Side	Pointed flap Wallet flap
3⅝ x4 11⁄16	Side	4 Baronial
3⅝ x6½	Side	6¾ Bankers safety 6¾ Commercial 6¾ Coupon Pointed flap 6¾ Postage saver
3⅝ x6½ (continued)	Side	6¾ Self seal 6¾ Self seal window 6¾ Souvenir 6¾ Typewriter Wallet flap 6¾ Window 6¾ Window (1 piece)
3⅝ x8⅝	Side	8⅝ Official 8⅝ Postage saver Window Window (1 piece)
3⅝ x8¾	Side	8¼ Window 8¼ Window (1 piece)
3¾ x5	End	Confectionery bag
3¾ x5¾	Side	5 Bank
3¾ x6¾	Side	1 Booklet 7 Official 7 Postage saver 7 Window 7 Window (1 piece)
3⅞ x7½	End	8 Glove

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Envelope sizes from smalles to largest, continued

Size	Opens at	No. and style
3⅞x 7½	Side	7¾ Bankers flap 7¾ Official Pointed flap 7¾ Postage saver 7¾ Self seal 7¾ S. flap official Wallet flap 7¾ Window 7¾ Window (1 piece)
3⅞x 8⅞	Side	9 Bankers flap 9 Bankers safety 9 Official 9 Postage saver 9 Self-seal 9 Sq. flap official 9 Typewriter 9 Window 9 Window (1 piece)
4 x 5⅝	Side	2 Booklet
4 x 6	End	6¾ Glove
4 x 6¼	End	Side seam open end
4 x 6⅜	End	15 Clasp 15 String & Button 7 Glove
4 x 7	End	7½ Glove Security ore
4 x 9	End	9 Policy
4⅛x 5⅛	Side	5 Baronial
4⅛x 6¼	Side	6 Bank
4⅛x 9½	Side	10 Bankers flap 10 Bankers Safety 10 Official 10 Postage saver 10 Self seal 10 Self seal-wind. 10 Sq. flap official 10 Typewriter 10 Window (1 piece) 10 Window
4⅛x 9½	End	10 Policy
4¼x 6¼	End	Confectionery bag
4¼x 7½	End	Side seam open end
4¼x 9⅝	Side	4 Booklet
4⅜x 5⅝	Side	5½ Baronial
4⅜x 7⅛	Side	7 Bank
4½x 5½	Side	5 Card
4½x 5¾	Side	5⅛ Card
4½x 5⅞	Side	2½ Booklet
4½x 6¼	Side	6¼ Bank
4½x 6⅝	Side	6¾ Bank
4½x 8	End	Security ore
4½x 9½	Side	10½ Bankers flap 10½ Sq. fl. official
4½x 9⅞	Side	Safety fold
4½x10⅜	Side	11 Bankers flap 11 Official 11 Postage saver 11 Sq. flap official 11 Window
4½x10⅜	End	11 Clasp 11 String & Button 11 Policy
4⅝x5 15/16	Side	5¾ Baronial
4⅝x 6¾	End	25 Clasp 25 String & Button 1 Scarf
4¾x 6½	Side	3 Booklet
4¾x11	Side	12 Bankers flap 12 Official 12 Postage saver 12 Sq. flap official 12 Window
4⅞x 7⅛	End	Confectionery bag
4⅞x 7½	End	Side seam open end
5 x 6	Side	6 Baronial
5 x 6½	Side	6½ Bank
5 x 7	Side	7½ Bank
5 x 7½	Side End End End End	8 Bank 3 Scarf 35 Clasp 35 String & Button Side seam open end
5 x 9	End	Security ore
5 x11	Side	Safety fold
5 x11½	Side	14 Bankers flap 14 Official 14 Postage saver Safety fold 14 Sq. flap official 14 Window
5 x11½	End	14 Clasp 14 String & Button 14 Policy
5½x 7½	Side End End	8½ Bank 4¼ Scarf Side seam open end
5½x 8	Side	8¾ Bank
5½x 8⅛	Side	5 Booklet
5½x 8¼	Side End End End End	8⅞ Bank 6 Scarf 50 Clasp 50 String & Button Side seam open end
5½x11½	Side	Safety fold
5¾x 8⅜	End	Confectionery bag
5¾x 8⅞	Side	6 Booklet
6 x 9	End End End Side	55 Clasp 55 String & Button Side seam open end 6½ Booklet
6 x12	Side	16 Bankers flap Safety fold 16 Sq. flap official
6¼x 9¼	End	Side seam open end
6¼x 9½	End	Side seam open end
6¼x 9⅝	Side	7 Booklet
6½x 9½	End	1¾ Catalog 63 Clasp Side seam open end 63 String & Button
6¾x 9½	End	Confectionery bag S-63 Safeway mailer
7 x10	End	3 Catalog 68 Clasp Side seam open end 68 String & button
7 x10½	End	Side seam open end
7½x10½	End	6 Catalog 75 Clasp Side seam open end 75 String & Button
7½x10½	Side	7½ Booklet
7¾x10½	End	S-75 Safeway mailer
8 x11	End	80 Clasp 80 String & button
8 x11⅛	Side	8 Booklet
8¼x11¼	End	8 Catalog
8½x11½	End	83 Clasp 83 String & button
8¾x11¼	End	87 Clasp
8¾x11½	End Side End	87 String & button 9 Booklet S-83 Safeway mailer
9 x12	End	10½ Catalog 90 Clasp 90 String & button
9¼x14½	End	94 Clasp 94 String & button
9½x12½	End	12½ Catalog 93 Clasp 93 String & button
9½x12⅝	Side	10 Booklet
9¾x12½	End	S-93 Safeway mailer
10 x12	End	95 Clasp 95 String & button
10 x13	End	13½ Catalog 97 Clasp 97 String & button
10 x15	End	98 Clasp 98 String & button
10¾x13½	End	S-97 Safeway mailer
11¼x14¼	End	14¼ Catalog
11½x14½	End	105 Clasp 105 String & button
11¾x14½	End	S-105 Safeway mailer
12 x15½	End	110 Clasp 110 String & button
12¾x15½	End	110 Safeway mailer

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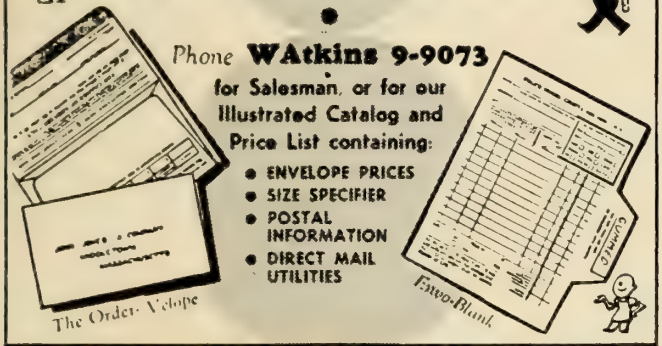
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Paper trade customs

Custom	Bond-writing	Manifold	Bible	Index bristol	Mill bristol	Tag	Blotting
1. Base size	17x22	17x22	25x38	25½x30½	22½x28½	24x36	19x24
2. Regular weights	Sub. Nos. 13, 16, 20, 24, 28, 32, 36, 40, 44	Sub. Nos. 7 to 10, inclusive, 100% rag, 75% rag, 25% rag only. Not made in 50% rag only for U. S. Gov.	Sub. Nos. 20, 24, 30	Sub. Nos. 90, 110, 140, 170, 220, wt. per M lbs. 180, 220, 280, 340, 440. Equiv. to 117, 144, 182, 222, 286, 20½x24¾	Sub. Nos. 90, 100, 120, 140, 160, 180, 200, 220	Sub. Nos. 80, 90, 100, 125, 150, 175, 200, 225, 250, 300	Plain–Sub. Nos. 60, 80, 100, 140 Coated–Sub. Nos. 100, 120, 140
3. Light-weights	Lighter than No. 16 billed as No. 16	Inquire regarding mill facilities. No. 7 usually lightest weight made	Down to Sub. No. 18	Min. Sub. No. 90 – 17x22. No. 43. Sub. lighter than No. 43 use ledger paper. See writing paper column.	Sub. No. under 90 add 1% for each 2 lbs below 90	Sub. No 80 lightest	
4. Heavy-weights	See index bristol column	See writing paper column No. 7 for Sub. over No. 10	Up to Sub. No. 40	Inquire regarding mill facilities	Inquire regarding mill facilities	Inquire regarding mill facilities	Inquire regarding mill facilities
5. Irregular weights	Charged at next higher regular weight	Charged at next higher regular weight	Inquire regarding mill facilities	4M lbs. min. without extra charge Less than 4M lbs. add 1c per lb. Min. 2M lbs.	4M lbs. min. without extra charge Less than 4M lbs. add 1c per lb. Min. 2M lbs.	4M lbs. min. without extra charge Less than 4M ibs. add 1c per lb.	Plain–2M lbs. without extra charge Less than 2M lbs. add 10% Coated–Add 25c cwt.
6. Special Sizes	5M lbs. min. without extra charge Less than 5M lbs. add 10% Usual min. 2M lbs.	2M lbs. min. without extra charge Less than 2M lbs. add 10% Usual min. 1M lbs.	2M lbs. min. without extra charge Less than 2M lbs. add 10% Usual min. 1M lbs.	2M lbs. min. without extra charge Less than 2M lbs. add 1c per lb.	2M lbs. min. without extra charge Less than 2M lbs. add 1c per lb.	1M lbs. min. without extra charge Less than 1M lbs. add 50c per cwt.	Plain–1M without extra charge Less than 1M lbs. add 1c per lb. Less than 500 lbs. add 10c Coated–500 lbs. min.
7. Over-runs, under-runs	Less than 2M lbs. 15% Over 2M lbs. 10%	Less than 2M lbs. 15% Over 2M lbs. 10%	Less than 2M lbs. 15% Over 2M lbs. 10%	Less than 5M lbs. 10% Over 5M lbs. 5%	Less than 5M lbs. 10% Over 5M lbs. 5%	10M lbs. and over 5% Under 10M lbs. 10%	Less than 2M lbs. 15% Over 2M lbs. 10%
8. Packing	Cartons	Cartons	Cases	Cartons	Cartons	Bundles	Cartons
9. Skids	1. 5M lbs. min. on skids. 2500 lbs. min. to skid. Deduct 10c cwt. from base price	Inquire regarding mill facilities. Usually same as writing paper. See Column 1, Custom 9	5M lbs. min. 2500 lbs. per skid less 45c per cwt.	Orders for 6M lbs. min. on 3M lbs. skids deduct 10c cwt. Under 3M lbs. to 2M lbs. regular carton price. Small size packed 2 or more on skid.	Orders for 6M lbs. min. on 3M lbs. skids deduct 10c cwt. Under 3M lbs. to 2M lbs. regular carton price. Small size packed 2 or more on skid	3M lbs. on min. base price	Skid packing base price. No allowance
10. Trimming	Usually trimmed 4 sides	Usually trimmed 4 sides	Not trimmed	Usually trimmed 4 sides	Usually trimmed 4 sides	Not trimmed	Not trimmed
11. Min. size without cutting charge	16x21	16x21	17x22	336 sq. inches	336 sq. inches	72 to 150 sq. inches add 25c cwt. 336 sq. inches usual min.	228 sq. inches

Paper trade customs, continued

Custom	Coated 2 sides	Coated 1 side	Super	M. F., E. F., Ant.	Offset	Cover
1. Base size	25x38	25x38	25x38	25x38	25x38	20x26
2. Regular weights	Sub. Nos. 37, 46, 50, 60, 70, 80, 90, 100, 120	Sub. Nos. 50, 60, 70, 80	Sub. Nos. 30, 35, 40, 45, 50, 60, 70, 80, 100	Sub. Nos. 30, 35, 40, 45, 50, 60, 70, 80, 100	Sub Nos 50, 60, 70, 80, 100, 120, 150	Sub Nos 25, 35, 40 50, 60, 65, 80, 90, 100, 130
3. Light-weights	Sub. under 70 down to 45 add 1½% per lb. Sub. under 45 down to 40 add 2% per lb. Sub. under 40 down to 35 add 3% per lb.	Sub. under 60 down to 40 add 1½% per lb. Sub. under 40 down to 35 add 2% per lb.	Sub. under 50 down to 40 add 1½% per lb. Sub. under 40 down to 35 add 2% per lb. Sub. under 35 down to 30 add 3% per lb.	Sub. under 45 down to 35 add 1½% per lb. Sub. under 35 down to 30 add 2% per lb. Sub. under 30 down to 25 add 3% per lb.	Sub. under 55 down to 40 add 1½% per lb. Sub. under 40 down to 35 add 2% per lb.	Sub lighter than No 25 billed as No 25
4. Heavy-weights	Sub. over 150 to 165 add 25c cwt. Sub. over 165 to 180 add 50c cwt.	Sub. over 140 to 155 add 25c cwt. Sub. over 155 to 170 add 50c cwt.	Sub. over 120 to 135 add 25c cwt. Sub. over 135 to 150 add 50c cwt.	Sub. over 120 to 135 add 25c cwt. Sub. over 135 to 150 add 50c cwt.	Sub. over 150 lbs. add 50c cwt.	Sub heavier than No 100 inquire Usually posted extra charge
5. Irregular weights	10M lbs. min. without extra charge Less than 10M lbs. add 5% 5M lbs. min. Lighter than Sub. 70 see Custom 3 above Heavier than Sub. 150 see Custom 4 above	10M lbs. min. without extra charge Less than 10M lbs. add 5% 5M lbs. min. Lighter than Sub. 60 see Custom 3 above Heavier than Sub. 40 see Custom 4 above	10M lbs. min. without extra charge Less than 10M lbs. add 5% 5M lbs. min. Lighter than Sub. 50 see Custom 3 above Heavier than Sub. 120 see Custom 4 above	10M lbs. min. without extra charge Less than 10M lbs. add 5% 5M lbs. min. Lighter than Sub. 45 see Custom 3 above Heavier than sub. 120 see Custom 4 above	10M lbs. min. without extra charge Less than 10M lbs. add 5% 5M lbs. min. Lighter than Sub. 50 see Custom 3 above Heavier than Sub. 150 see Custom 4 above	5M lbs min
6. Special sizes	5M lbs. min. without extra charge Less than 5M lbs. add 10% Min. 2M lbs.	5M lbs. min. without extra charge Less than 5M lbs. add 10% Min. 2M lbs.	5M lbs. min. without extra charge Less than 5M lbs. add 10% Min. 2M lbs.	5M lbs. min. without extra charge Less than 5M lbs. add 10% Min. 2M lbs.	5M lbs. min. without extra charge Less than 5M lbs. add 10% Min. 2M lbs.	2M lbs without extra charge Less than 2M lbs add 10 Usual min. 1M lbs
7. Over-runs, under-runs	2M-5M lbs. 20% 5M-10M lbs. 10% 10M-40M lbs. 5% 40M lbs. and over 3%	2M-5M lbs. 20% 5M-10M lbs. 10% 10M-40M lbs. 5% 40M lbs. and over 3%	2M-5M lbs. 20% 5M-10M lbs. 10% 10M-40M lbs. 5% 40M lbs. and over 3%	2M-5M lbs. 20% 5M-10M lbs. 10% 10M-40M lbs. 5% 40M lbs. and over 3%	2M-5M lbs. 20% 5M-10M lbs. 10% 10M-40M lbs. 5% 40M lbs. and over 3%	Less than 2M lbs 15 Over 2M lbs 10
8. Packing	Cases	Cases	Cartons and cases	Cartons and cases	Cases	Cartons only
9. Skids*	Standard sizes min. 5M lbs. 45c cwt. allowance on skids Mill stock paper in cases cannot be repacked on skids Special sizes min. 3M lbs. 45c cwt. allowance Note—Less than 3M lbs. down to 1600 lb. skids no allowance	Standard sizes min. 5M lbs. 45c cwt. allowance on skids Mill stock paper in cases cannot be repacked on skids Special sizes min. 3M lbs. 45c cwt. allowance Note—Less than 3M lbs. down to 1600 lb. skids no allowance	Standard sizes min. 5M lbs. 45c cwt. allowance on skids Mill stock paper in cases cannot be repacked on skids Special sizes min. 3M lbs. 45c cwt. allowance Note—Less than 3M lbs. down to 1600 lb. skids no allowance	Standard sizes min. 5M lbs. 45c cwt. allowance on skids Mill stock paper in cases cannot be repacked on skids Special sizes min. 3M lbs. 45c cwt. allowance Note—Less than 3M lbs. down to 1600 lb. skids no allowance	Standard sizes min. 5M lbs. 45c cwt. allowance on skids Mill stock paper in cases cannot be repacked on skids Special sizes min. 3M lbs 45c cwt allowance Note—Less than 3M lbs. down to 1600 lb. skids no allowance	Packed on skids minimum 5000 lb 10c cwt allowance Small sizes packed 2 or more on skid Special sizes min 3M lbs 45c cwt allowance Note Less than 3M lb down to 1600 lb skids no allowance
10. Trimming	Usually trimmed 4 sides	Usually trimmed 4 sides	Untrimmed. Trimmed 1 or 2 edges add 20c cwt. 3 or 4 edges add 10c cwt. each cut	Untrimmed. Trimmed 1 or 2 edges add 20c cwt. 3 or 4 edges add 10c cwt. each	Usually trimmed 4 sides	Usually trimmed 4 sides
11. Min. without cutting charge	17x22	17x22	17x22	17x22	17x22	20x26

*Maximum size skid usually 45x70, max. height 72", clearance 7¾", min. between runners 28".
Coated and Super 25x38 up to 32x44 packed 2 on.
English Finish 24x36 up to 35x45 packed 2 on.

Eggshell and Antique 25x38 and 24x36 sizes too large to pack 4 on and too high to pack 2 on. Sizes 33x34 to 38x50 too large to pack 2 on. These exceptions can be packed on skids of less than 3000 lbs. down to 1600 lbs. but no deduction is made.

Estimating paper spoilage

Average requirements for spoilage allowances for single or multi-color reproduction of simple, average, and close-register copy in short and long runs

Daniel Stimson

The following tables list the general spoilage allowance, in percentages, for letterpress work. They should not be taken as the final allowance on any particular job. The printer should always be consulted before ordering the paper.

The kind and quality of paper, the particular press used, the condition of type and plates, the quality of ink, atmospheric conditions, and whether or not it is a "bleed" job, are only a few of the factors that will cause the actual requirement to be lower or higher than the percentage shown in the table.

These figures are simply average requirements for spoilage, which of course diminish as the quantity involved increases. Special attention should be given to the extra cost factors indicated for folding, binding, and trimming.

Class A: Ordinary work, simple register
Class B: Average commercial work, medium register
Class C: Vignette halftones, close register

Class ⇩	Per cent of spoilage, 1-50M copies, one-color printing							
	1	2	3	4	5	10	25	50 and over
A	.055	.050	.045	.040	.035	.030	.025	.020
B	.060	.055	.050	.045	.040	.035	.030	.025
C	.065	.060	.055	.050	.045	.040	.035	.030

Class	Per cent of spoilage, 1-50M copies, two color printing							
	1	2	3	4	5	10	25	50 and over
A	.066	.060	.054	.048	.042	.036	.030	.024
B	.072	.066	.060	.054	.048	.042	.036	.030
C	.078	.072	.066	.060	.054	.048	.042	.036

Class	Per cent of spoilage, 1-50M copies, three-color printing							
	1	2	3	4	5	10	25	50 and over
A	.072	.065	.059	.052	.046	.039	.036	.026
B	.078	.072	.065	.059	.052	.046	.039	.033
C	.085	.078	.072	.065	.059	.052	.046	.039

Class	Per cent of spoilage, 1-50M copies, four-color printing							
	1	2	3	4	5	10	25	50 and over
A	.077	.070	.063	.056	.049	.042	.035	.028
B	.084	.077	.070	.063	.056	.049	.042	.035
C	.091	.084	.077	.070	.063	.056	.049	.042

In addition: If to be folded, multiply the percentage by 1.1; if to be folded, bound, and trimmed, multiply the percentage by 1.2.
Example: 5,000 copies, Class B, requires 4% for spoilage in black-and-white, or in one color; if in two colors it would be 4.8%; if also to be folded, 4.8% × 1.1 or 5.28%; if also to be bound and trimmed, 4.8% × 1.2 or 5.76%.

1 Art and photography

2 Photo-engraving

3 Electrotypes, duplicate plates

4 Paper

Printing processes **5**

6 Binding, mailing, etc.

7 Typography

8 Buyers' guide, index, etc.

Printing processes

Push tab down, fold on this crease then fold upward on other crease over edge of page and insert in slot.

Thumb-dex patent 2300623
Other patents pending

Printing processes

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Two-color printing

Black-and-white copy with color overlay ideal for two-color plates; process plates should be made from art executed in the two printing colors

George W. Finnegan

In any discussion of two-color printing, it is important to realize that it is not a substitute for, or an imitation of, full color. There are many instances where it is more advantageous and desirable to use only two colors, but because of its variety of application, it is difficult to formulate any hard and fast rules for the use of a second color.

There are times when it must be used like lipstick, to accent and give emphasis to a particular item, while on other occasions its use must be lavish. The main thing to remember is that thought and design must enter into all considerations so as to avoid a garish, badly disciplined effect.

All two-color advertising is not two-color process, nor does it need to be. It is a waste of money to purchase two-color process plates unless they give additional realism, dimension, or roundness to the subject. It might be said that two-color process is necessary only when various hues resulting from a mixture of two colors is desired.

The combination of black and red is the most used in two-color printing, but it is not the only possible combination nor, for some subjects, the most desirable. Not only are combinations of black with yellow, green, light blue, or brown effective, but interesting and unusual effects are achieved by using dark blues, browns, or greens for the key plate in combination with other colors.

Key plates

It is a safe rule to remember that the key plate of a set of two-color process plates must be black or a dark color, as the bulk of the type message will print in that color, and type in brilliant, light colors is very unreadable. The color plate should be of a light color, preferably a brilliant, highly pigmented one, to avoid muddiness and dullness.

The use of blue as a second color, in a set of plates using a black key, warrants special caution. Unless it is a clean, bright blue, there is the tendency to a grayness in tints of less than 40 per cent, thereby cutting down the effective range through which it can be used.

A set of two-color plates differs from a set of two-color process plates in that in the former, no mixtures of the colors is possible to obtain different hues. A wide range of shades is possible but, except for solids, the colors cannot overprint. A set of two-color plates can be halftone in the key plate and line for the color, or both plates can be halftone or combination, provided the halftones do not overprint.

Two-color plates are best used for subjects where complicated modeling or shading in color or the impression of absolute realism is not necessary. The same rule of a dark key and a light color plate also applies.

Two-color process plates

While all types of copy are suitable for two-color process reproduction, the most satisfactory is a drawing or painting executed in the two colors in which the job is to be printed. There are only two special precautions to be observed:

1. The most important is that, in the execution of the art, the artist must use only the two colors in which the job is to be reproduced. For example, in a black and red job, an artist, to make the original art more attractive, will often use for accent in a few spots a red of a different shade than the basic red of the rest of the picture. This will result in a more attractive original for the client's approval, but will lead to much disappointment in reproduction because the printing ink will be of one shade only and the bootleg accents and effects will disappear, to the chagrin of both the client and the artist.

2. Heavy underpainting and values close to the tone of the key plate have a tendency to become muddy and clogged up, so that what is a warm, glowing spot on the original becomes a dull, muddy spot in the reproduction.

While a drawing or painting gives the best results, photographs—both color and hand-colored—are satisfactory reproduction copy for two-color process.

In the case of a color photograph, carbro, dye print, or transparency, if care is used in the selection of original material—that is, backgrounds, accessories, clothes, etc.—so that they are all related hues of the same two colors, a satisfactory reproduction will be obtained.

Black-and-white photographs to be used for hand coloring should not have heavy tone value in the areas where color is desired. Because most hand coloring is done with transparent dyes, and the effect of the original seem perfect to the eye, the engraver's camera has the tendency to look through the dye and pick up the dark tones underneath.

Ideal copy for two-color printing is a black-and-white drawing or assembly of photographs, with an overlay indicating where and in what strength the color is to be used.

This is particularly true for subjects that have fine detail in the key plate, because the reproduction camera cannot get 100 per cent separation and a thickening of fine lines and detail in copy where the color is applied directly to the drawing is the inevitable result.

It is not always possible to obtain a client's approval on copy with overlays, so in subjects that must have color applied directly to the drawing, it is advisable to keep the color to a light tone, preferably light blue, green, or yellow, and, for red, to use orange value.

Colors, except solids, cannot be overprinted without making two-color process plates.

The same two colors must be used throughout the original to obtain a faithful reproduction of that original.

Heavy mixtures of two colors should be avoided in order to obviate muddy areas in reproduction.

Black-and-white drawings with color overlays are the best reproduction copy for two-color plates (not process).

Two-color work should not be expected to look like full color; it will not. It should be designed for the medium.

High contrast should be kept in copy for clean results.

Three-dimensional printing

Illusion of three dimensions obtained in new printing, photographic processes; no viewing device required; printers now being trained and licensed

William Hamilton

Three-dimensional printing is now practicable both technically and economically, for display and printed advertising. Amazing progress has been made in the last few years by scientists in their endeavor to bring into reality the printer's dream of reproducing three dimensions on the printed page. Dimensional Arts, Inc., for example, has already licensed a number of important printers and lithographers to use its many patents and its technological "know-how."

Three-dimensional photography

Three-dimensional printed pieces are achieved in full color, as well as in black-and-white, and while they give the illusion of full depth of reality, the printed sheets will lie flat and thin.

The stereopticon method of viewing two or more pictures of the same object simultaneously, at different angles, requires that the person viewing them bring the two images together with colored filters or by a special lens. Three-dimensional printing retains the same optical principles used in the stereopticon, but incorporates the whole "device" in the printing reproduction itself. No viewing apparatus is needed.

Three-dimensional printing and platemaking employ three-dimensional photography. In taking the picture, conventional film is used. However, a special lens and a patented camera record on the film what can be best described as multiple images (rather than just two, as in the stereopticon method), each one microscopically out of register with the other images. The film is then processed.

The three-dimensional picture can be viewed from any angle and any distance. It is claimed that there is no distortion of any kind. A color transparency, as produced by Dimensional Arts, Inc., looks like any other Kodachrome, Ektachrome, or Ansco Color transparency. It has no added thickness and it is flat to the touch.

To get three dimensions on the film and on the printed sheet, Dimensional Arts must have a three-dimensional subject before the lens of the camera. It cannot give the illusion of depth where there is none. It cannot give depth to the reproduction of a flat painting, drawing, or sketch. But given live models, packages, samples of the product in use, or any three-dimensional subject, it can produce a breathtakingly lifelike reproduction.

The art of building three-dimensional backgrounds for Dimensional Arts reproduction is readily learned, and licensed photographers will work hand in hand with set designers to achieve the best results and to determine how best to photograph them. They will use, of course, only live models and real products. They will also work closely with licensed lithographers and printers to achieve the perfection of finished three-dimensional printing.

For three-dimensional reproduction, whether by letterpress, lithography, gravure, etc., a special screen has been designed and is used in place of the conventional halftone screen, and an additional impression is required to coat the printed sheet with a cellulose material.

If viewed by a person passing by, the image on the printed sheet appears to turn, or the viewer seems to be walking around it, much as if he were actually passing a three-dimensional physical object. Scenes in the foreground seem to move in true relation to scenes in the background.

Dimensional Arts produces a startling effect of three dimensions, using many images instead of two, as mentioned above. In moving pictures, the viewer only imagines he is seeing a moving scene. Actually, his retina is merely retaining an image of a previous frame, while he is viewing the next frame, and therefore the picture seems to "move." Similarly, in three-dimensional photography, the third dimension is in the brain, the photograph and the printed page being flat.

The cost of Dimensional Arts three-dimensional printing is in line, particularly in view of the extraordinary results achieved. A rough estimate of the additional printing costs of a four-color job would be 25 to 40 per cent more than the same subject in two-dimensions. Costs vary with the same factors that determine the costs in conventional two-dimensional printing and lithography.

Display transparencies

Should it be desirable to use mounted transparencies for display purposes, these can be printed in any quantity and produced rapidly, once the proof is approved. These transparencies are used primarily for counter and point-of-purchase displays.

In designing the layout for a job to be reproduced three-dimensionally, it is wise to study methods of heightening the three-dimensional effects by means of backgrounds, the angle at which the central or main object is viewed, and the combination and contrast of colors in the chief optical planes of the subject.

Imaginative art direction can cause the printed picture to appear as though projecting from the printed sheet. Since everyone tries to achieve three-dimensional effects in two-dimensional printing, no less care should be taken in the set-up for three-dimension work. The entire burden of achieving the three dimensional effect should not be put on the process; every advantage should be gained from creative set building, grouping, and posing.

Another process for obtaining three-dimensional photographic effects is Trivision. As PRODUCTION YEARBOOK goes to press, Trivision is not yet on the full commercial market and information relative to its present technical status both for photodisplay and for printing processes is being temporarily withheld. In principle, Trivision employs a film ridged as finely as 300 lines to the inch, with the result that upon exposure, an image is received not on an absolutely flat surface (although it is flat to the touch) but on different optical planes. When viewed, the image is reflected from these different planes. (See also "Akravue" in Cross-Reference Index.)

PRINTING QUALITY

that much-discussed, highly controversial and decidedly relative phrase—is, with our organization, far more than a striving for mechanical perfection. To be sure, that is an essential characteristic of successful printing.

Above and beyond that, however, the aim of all printed matter should be its favorable acceptance by its readers. And that, in turn, calls for the exercise of knowledge, experience and intelligence as well as productive skill.

Based on that formula, this organization has, over the years, produced a wide range of fine printing—by both letterpress and offset—for a discriminating clientele.



ROGERS · KELLOGG · STILLSON INC.

461 Eighth Avenue, New York 1, N. Y.

Telephone BRyant 9-5000

DIRECT ADVERTISING · PRINTING · OFFSET LITHOGRAPHY

News color

Improved reproduction quality, speed of handling, favorable rates, and number of plants with adequate equipment have stimulated advertiser interest

George B. Dearnley

In the last decade, advertiser interest in run-of-newspaper color advertising has been increasing, as it was felt that national campaigns needed this added factor to obtain overall coverage.

However, it was felt that while the newspaper industry was making the most of its present equipment, general run-of-paper color advertising was a rather hazardous venture for the national advertiser and agency.

The quality of color reproduction in newspapers, as against that in national magazines, national rotogravure groups, etc., was not up to where it could be compared with the latter publications. The advertiser has felt that many factors should be overcome before he would trust large campaigns.

The Rehabilitative Joint Mechanical Committee of the American Newspaper Publishers Association and the American Association of Advertising Agencies has taken this subject under study. Particular emphasis is being placed on coordination of advertiser, agency, and newspaper on such factors as supply and quality of newsprint; standardization, quality, and colors of ink; type of plates; register; progressives; how best plates are made; standardization of minimum linage, etc.

Estimates vary on the number of newspapers now equipped to handle run-of-paper newsprint color, but recent surveys have indicated that as many as 640 can produce two or more colors, and 108 of these four colors.

PRODUCTION YEARBOOK has obtained from leaders in newspaper color printing the following articles on their personal views. Any variations they may present in this symposium are simply the result of their varying approaches to this still not fully developed subject.

The Chicago Tribune

The resumption of widespread use of newsprint color advertising awaits only a more nearly normal supply of paper. Most publishers are preparing for this, for press manufacturers report that nearly all orders for new printing equipment specify color units.

Meanwhile, the paper situation has not wiped color out of the daily press. The Chicago Tribune during the war printed its Page 1 cartoon in four colors. It also introduced four colors to the covers of two new Sunday newsprint sections—its Magazine of Books and its music and drama section. The back covers of both carry newsprint color ads.

Four major factors are ready to give new impetus to newsprint color advertising as soon as newspapers are able to start promoting its use.

First is the high quality production being achieved. Newsprint color today is good. That does not mean that it is good after allowances have been made for the high speed of news presses and the texture of newsprint; what it does mean is that it is good by any standard, and steady improvement may be expected.

In the early years of newsprint color, the Tribune advised advertisers to use illustrations in which the figures, heads, etc., were relatively large and in which there were no fine details requiring highly accurate register.

Today, the Tribune accepts virtually any kind of copy. This frees the advertiser from having to plan especially for newsprint color and permits him to schedule for the newspaper practically any kind of art work he would use for magazine reproduction.

The second factor is the favorable cost advantage the newspaper offers as compared to magazines. The cost differential between color and black-and-white in leading national magazines amounts to some 43 per cent. Taking the Tribune differential as typical, newsprint color costs the general advertiser only 17 to 25 per cent more than black-and-white.

The third factor is the speed with which an advertisement in color may be inserted in newsprint color. When the Tribune makes the plates, the deadline for a full page in four colors, daily or Sunday, is 10 working days prior to publication. When the advertiser furnishes the plates, the deadline is five working days. For Sunday tabloid pages—the back covers of the book and music and drama sections—the deadline is 21 days when the newspaper produces the plates, and 16 days when the plates are furnished.

The fourth factor will be the increased number of newspapers in which color will be available.

Most of the plates made for newsprint color in the Tribune are produced in the newspaper's own color engraving department. While the Tribune prefers this, it accepts plates made outside, provided that they conform to the following requirements:

Solid colors cannot be overprinted with safety. Solids should carry a "tooth" for best printing. Overprints should not involve more than two colors. Reverse type should not be used where it is cut out in more than one color.

Each plate must be full size, without mortises, and with a screen in all dead metal that must be left in the plates. Engraving should be etched at least .005 inches deep. Shoulders around all printed matter should be routed deep and very close.

The Tribune color engraving department is equipped to make color separation process plates or Ben Day plates.

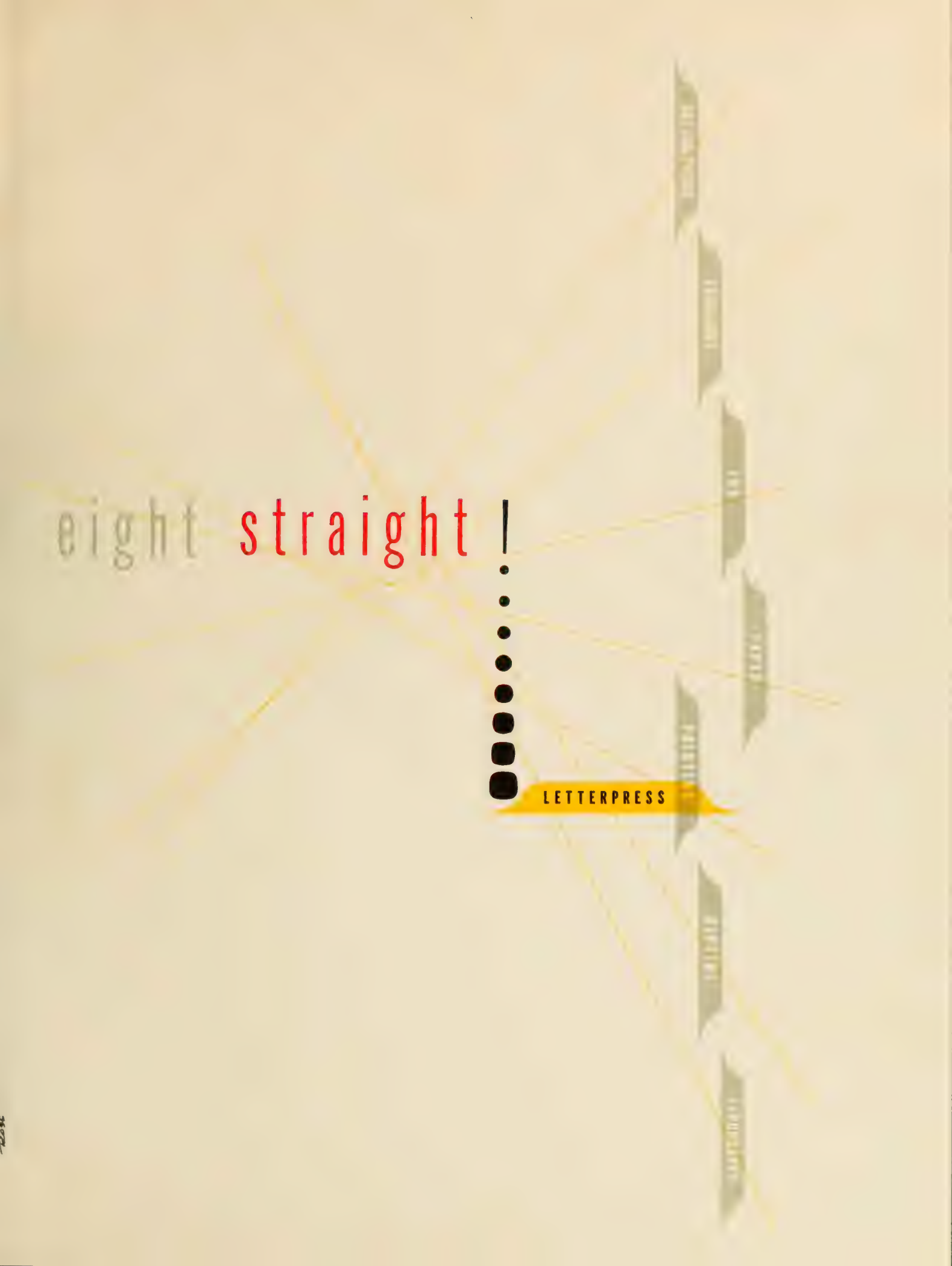
JOHN W. PARK
Production Manager

The Indianapolis Times

Considerable progress has been made by American newspapers in printing run-of-paper color, and there are strong evidences that there will be increasing demand for this type of advertising.

The only reason there is not more is the lack of equipment and the shortage of newsprint. A reasonable expectancy is that, within five years, more than 200 newspapers will publish four-color advertising.

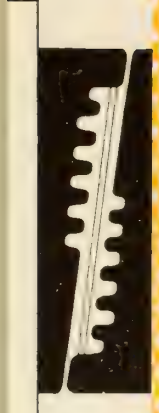
There are now enough newspapers across the nation able to handle color


eight straight!
LETTERPRESS





eight out of eight



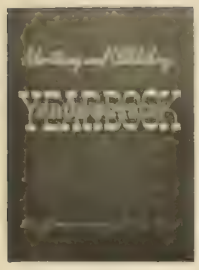
This and the seven previous editions of Production Yearbook were printed by Davis, Delaney.

We're proud of this record — it means to us, that the publisher has confidence in our craftsmanship and know-how.

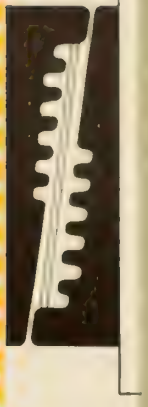
And that's true of most of our clients — having tried us once, they come back again and again. In fact, 93.6%* of our sales are to repeat customers.

*By actual audit covering a 3-year period

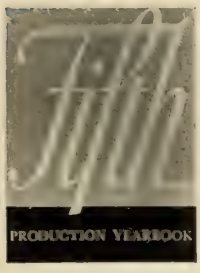


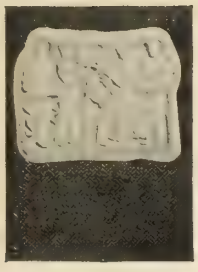
















Davis · Delaney · Inc.



LETTERPRESS

Davis · Delaney · Inc.

Whether your consumer is a budding art patron or a blushing bride, if you have something fine to sell, fine printing will sell it.

141 EAST 25TH STREET · NEW YORK 10

PHILADELPHIA OFFICE: 1518 WALNUT STREET · PHILADELPHIA 2

Printed on Oxford Polar Superfine Enamel.

advertising to justify its consideration by national advertisers, particularly when four-color is supplemented by two-color advertising for some cities.

The increased space cost for four-color run-of-paper over black-and-white in newspaper advertising runs between 40 and 50 per cent, exclusive of plates. In most cases, the plate costs for newspaper color are considerably less than those for magazines. The ratio of production costs for color vs. black-and-white in newspapers is relatively comparable with that in magazines or commercial printing.

The time element on newspaper color could give the advertiser an advantage over magazines because most newspapers do not require the color plates until 48 hours before publication.

Four-color newspaper plates can be made in less than two weeks, with ample time for correction and approval by the advertiser. Many newspapers are now equipped to make four-color process plates for their advertisers in relatively fast time and at a considerable discount.

Production of copy for run-of-paper color in newspapers is much the same as for magazines; in fact, the same copy can be used. New engraving equipment being installed throughout the country will permit the making of four-color newspaper process plates from film or color photographs in 48 to 72 hours, using a 65-line screen.

Louis D. Young
Advertising Director

The Milwaukee Journal

The Milwaukee Journal has done four-color run-of-paper printing for many years. However, since 1945, it has made an earnest effort to develop this color so that its full advantage could be realized by both the advertiser and newspaper itself.

This meant a departure from a too-prevalent practice of using color merely to stop the reader, rather than to attractively illustrate the merchandise. It was believed that this change would produce results of great sales value to the advertiser, while at the same time improving the appearance of the paper.

The Journal advertising department obtained the cooperation of the advertisers and each color page received close, individual study before it was accepted for publication, until the advertiser had a thorough knowledge of the process. Within The Journal organization, considerable work was done developing methods to produce and print four-color process engravings with regular black-and-white equipment.

With this as a start, fairly satisfactory results have been obtained, but there is considerable work to be done before the newspaper industry attains the quality of run-of-paper color it would like to see. Experience has convinced all who have had any part in this development that good color can produce results far beyond the possibilities of black-and-white.

Briefly, The Milwaukee Journal's color operation is as follows:

Four-color process engravings are produced on zinc plates, using a 75-line screen, from black-and-white photographs, colored drawings, color transparencies, and separation prints from one-shot color cameras, for both editorial and advertising purposes.

The Ben Day process is still used extensively for some advertisers to produce four-color work from black-and-white wash drawings. Direct pressure molding machines are used to mold the mats. The stereotype plates cast from these mats are run on standard black line newspaper presses at the regular running speeds that range from 38,000 to 40,000 papers an hour.

Julian J. Eberle
Mechanical Engineer

[Mr. Eberle also supplied the following data in question-and-answer form.]

Q. How do you feel about the quality of this work?

A. An advertiser with a knowledge of newspaper reproduction methods can obtain effective results through the proper use of layout and copy selection.

Q. Do you feel that advertisers, accustomed to magazine quality, will hesitate to use four-color newspaper work until its quality is greatly improved?

A. If comparative printing quality were the sole basis for selecting the newspaper, the advertiser might hesitate because the high quality of paper, high-priced inks, fine screens, and relatively slow press speeds used in magazine printing are advantages that newspapers will probably never overcome.

However, the advantages of newspaper advertising for straight black-and-white reproduction are well recognized. Those who have used full-color reproduction in newspapers have found that the color gives results that far exceed the additional expense involved. It would seem that it is this comparison between newspaper color and newspaper black-and-white that should be the determining factor, rather than a comparison with magazine color on the basis of quality.

Q. What is the increased cost of production to the user of four-color work in newspapers? Is it in the same ratio as color magazine and commercial printing is to black-and-white?

A. The basis of charging, and the amounts charged, vary so widely among newspapers that no specific answer can be made. This is one of the main complaints national advertisers have to newspaper color.

Q. On the time element, how fast can prints be made, and how much time would there be for approval and correction?

A. The time element would largely depend on the work to be done and the company supplying the plates. The newspapers would probably want the plates, electros, or mats one week in advance of running date. The engraver and mat maker would have to have their material in time to meet this schedule.

Q. For the most part, do newspapers make their own color plates or do clients and agencies prepare the plates?

A. Most large newspapers would probably have the engraving facilities. But a national campaign would undoubtedly follow much the same procedure now used in color comic advertising, with the agencies preparing the copy; an engraving company, the plates; and an electrotyper or stereotyper, the electros or mats for each newspaper.

Q. What production steps are taken in the newspaper plants or should be taken by the advertiser's production department that differ from magazine color production? What type of art work is most suitable?

A. For the best and most uniform results in a national advertising campaign in four colors:

1. Use a 65-line screen.
2. Have adequate depth in the originals to permit sufficient depth in material to be used by the newspapers.
3. Use same gauge metal on all plates.
4. Put register mark at each corner—at top and bottom of plate—as close as possible to the printing material.
5. Limit overprinting to 200 per cent if at all possible.
6. Use whites in illustration to give greater tone values.
7. Do not crowd illustrations.
8. Avoid lettering in more than one color to minimize the register problem.
9. To avoid harsh edges, carry tone over entire plate of each illustration. This will require a fine re-etching of the highlight areas to hold the whites.

How to get an estimate

Specific information regarding every phase of the job from status of copy to delivery instructions is needed to formulate a reliable estimate

W. D. Molitor

The manufacture or production of all printed promotion is an involved and scientific process with almost innumerable variations. Because of this there are two ways in which a printer can arrive at an estimate:

1. He can protect himself where a variable exists by figuring the more expensive way of manufacture; or

2. He can figure the less expensive way of doing the work in the hope that the material provided will coincide with that upon which he has estimated; or that if it does not coincide, the client will be willing to pay the extra charges.

These methods are not accurate, and frequently result in a wide margin between two estimates on identical work by different printers.

The advertiser can narrow this margin between estimates and obtain a better idea of the ultimate cost of production if he gives the estimator specific data about all the variable factors.

First, there is the general description of the material to be printed. Has the printer received sufficient information on the quantity to be printed, the number of pages, page size, number of colors, type of binding, and printing process? If so, then there are a number of other variables that should be checked. It is impossible to cover all contingencies, but the following itemized list may serve as a guide.

Copy

Manuscript or reprint?
Typed on one or two sides?
Straight matter, tabular matter, or runarounds?
Layout with copy?
English or what foreign language?
Copy-fitted?
Type style or face?
Type size?
Combinations of type?

Proofs

Galley proofs or page form?
How many?
Engravings inserted in proofs or to follow?
Flat proof, kraft dummy, or color paste-up?

Engravings

If furnished by customer

How blocked and how mortised?
Mounted or unmounted?
Mounted in position?
Line cuts or halftones?
What screen will be used?
How many of each?
Square finish, vignette, outline, or highlight halftone?
If color process, are progressive proofs furnished?
If electros are furnished, are they wax mold, lead mold, Tenaplate, or plastic mold? New? Used?
Are electros in page form or single units?

If furnished by printer

How is the art work prepared?
Is art work in single pieces or spreads?
If in spreads, are they printing spreads or facing pages?
Are photographs and art work furnished for same reduction?
How many reductions necessary?
Has it been scaled?

If printed by offset

Are repro proofs of type supplied?
Should printer proofread copy or accept it as furnished?
Should printer furnish blueprint dummy or stripped blueprints?

Paper

If furnished by customer, stipulate weight, size of sheet, name and/or description of paper, delivery date.
If furnished by printer, what paper is preferred for inside, for cover, for flyleaves, for envelopes, for stiffener?
Will you accept a substitute?
Will job print on both sides or only one side of the sheet?
What grain direction is preferred?

Press work

Specific processes to be used?
How many colors to be printed?
Is it process color?
How many pages with one color, two colors, etc.?
Which pages?
How many bleed pages?
How many sides bleed?
Specify colors to be used, or provide color match.
Should printer show press sheet?

Binding

Loose leaf, plastic, or other special?

Folders

Specify flat size.
Number of folds?
Folded size?

Booklets

Flush or extended cover?
Saddle wire, side wire stitched, or sewed?
How many staples?

Miscellaneous finishing

Die cuts?
Varnish or lacquer?
Imprinting?
Mounting?
Indexing?
Perforating?
Scoring?
Laminating?
Embossing?
Numbering?
Easeling?
Metal edging?
Swatching?

Delivery

Should packages be banded, wrapped, delivered in cartons, or on skids?
Should cases be labeled?
If shipped out of town, by freight, express, or parcel post?
Prepaid or collect?

COLORED PENCILS OF UNSURPASSED QUALITY



GENERAL'S

Multichrome

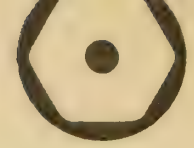
COLORED PENCILS



50 BRILLIANT COLORS

Created by Master Craftsmen for discriminating Artists





Multichrome

COLORED DRAWING PENCILS

50 BRILLIANT COLORS

STRONG-SMOOTH-VIVID
PERMANENT

Years of research were required on the part of General's color experts to produce the 50 beautiful colors in MULTICHROME pencils. They are made of the finest pigments produced—are permanent to a remarkable degree and moisture proof.

The strength and smoothness of the leads, the unusual variety and lasting brilliance of the colors all contribute to the superlative quality built into MULTICHROME.

Artists, architects, engineers, draftsmen and photographers will appreciate these pencils.

Attractively packaged in easel-backed boxes of assorted colors for convenience when using, also packed three dozen of one color to the box.

No. 400A set of 12 colors marked §
No. 401A set of 24 colors marked †
No. 402A set of 36 colors marked °
No. 448A set of 48 colors, all shown at left except Copper and Ivory Black.

Colors marked * recommended for marking blue prints.

General Pencil Company

67-73 FLEET STREET TRADE MARK JERSEY CITY 6, N. J.

Makers of Fine Pencils since 188


414* § † °
White


415* § † °
Black

No. 448 A
The set of 48 colors
Illustrated



Split-color printing

Process permits printing a great many colors in one run through the press; particularly suitable for color sample cards and color blending

James Mulherin

Recent developments in the printing industry have perfected techniques and reduced costs for jobs requiring a large number of colors. Known variously as split-fountain, split-color, or rainbow printing, the exact methods vary from plant to plant.

Split-color printing is particularly adapted to jobs requiring a great number of colors to be printed at one time, such as:

1. Color sample cards for manufacturers of crayons, paints, dyes, inks, fabrics, plastics, etc. The use of this process for such cards makes possible excellent color matching and permits the utilization of the sheets for magazine inserts. Pasted-on chips with sprayed colors formerly used for this purpose are not allowed in second-class mail. By one process, it is possible to print 14 colors in a single impression with only ⅜ inch separation between colors.
2. A campaign of mailing pieces such as blotters, post cards, or folders, in which it is desired that each piece in the campaign have a different color.
3. A multicolor job in which the different colors are used on opposite sides of or across the sheet. The printer can lay out the job to obtain a maximum number of colors in a minimum number of impressions.
4. When a blending of colors for a rainbow effect is desirable.

Some plants use rubber plates for this process. The ink fountain is split, or so divided that different parts of it feed different colors of inks to the rollers and the form. From this point on, there are three different production techniques that are in widespread general usage.

Pantone process

In the Pantone technique, the steel vibrator rollers are cut so as to correspond with the channels of the fountain. This system eliminates the cutting of the composition rollers and permits the printing of different colors only ⅜ inch apart without blending. Brass collars for the steel rollers permit their reconversion to one-color work.

So that a color division of a variety of number of colors in a variety of positions from one job to another can employ the same rollers, specially constructed rollers have been developed with a solid core and sliding collars of adjustable widths that can be fastened at any desired place on the roller by means of set screws. It is claimed that a press can be converted by this method to split-color printing in 15 minutes. The General Pencil Company advertising insert that appears on page facing this article was produced by this process.

Roller cutting

Another process of split-color printing does not require the use of special rollers. In this system, the composition rollers are actually cut in the pressroom to fit the specific job at hand. While this often causes the rollers to be useless after completion of the job for which they are cut, excellent results can be obtained.

The roller cutting is done to prevent the different colors of inks in the fountain or trough from blending. Sometimes a job can be so laid out that the blending would occur in nonprinting areas of the form and thus make the roller cutting unnecessary.

The third method is known as rainbow printing because no rollers are split and the various colored inks in the fountain are allowed to blend. While the uses of this technique are limited and the blending is not uniform throughout the run, it is a method of obtaining eye-appealing multicolor effects at relatively low cost.

Naturally, the cost of any of these methods is greater than for single-color printing, but the much greater appeal and selling punch that can be put into a job often warrants the added cost. Furthermore, split-color printing is usually much more economical than process color printing, although it does not serve the same purpose nor create the same effects in most instances, as it requires fewer impressions for the number of colors used, and less expensive plates.

Because the technique of each printer is adapted to his equipment, no standardized production procedure can be recommended for jobs that will be done split-color. However, in planning any job that can be improved with color at a minimum of added cost, it is generally suggested that while the job is still in the rough layout stage, the printer be called in to make suggestions as to how it can be adapted for split-color printing.

Because the process, for economic and technical reasons, requires that the colors fall in certain places on the press and with certain gaps between colors, the job should be adapted to the printer's requirements early in its development. Usually the change in design that a printer will recommend to so adapt the job will in no way affect the basic layout or effect of the sales message.

Limitations of process

Some of the limitations to the process that should be considered are:

1. Where roller cutting is necessary, a small run may not justify the cost of such cutting.
2. It may not be possible to lay the job out efficiently without sacrificing an essential design element.
3. The press layout may be such that to properly separate the colors, a wastage of paper will result. The amount to be wasted will determine the extent to which the process is practicable for the job under consideration.

To help determine the practicability of the process for any given job and to permit the layout man to adapt the job to the printer's equipment, it is suggested that the production man obtain from the printer an imposition sheet or dummy showing the color channels and position of pages in the layout, and then lay out the desired job accordingly.

Imposition

Correct layout of press forms is essential to efficient printing and such operations as folding, sewing, tipping, inserting, and finishing

I. H. Sayre

Imposition is the arrangement of type pages on the printing sheet. For book and booklet work especially, the arrangement must be planned so that when the printed sheets are sent through the folding machines, they will emerge as signatures with the pages in proper numerical sequence.

Custom through many years of usage has established the proportions that govern the size of the printed page. All paper merchants carry sizes of paper to meet these requirements. Standard page sizes, together with the sheet out of which they cut without waste, are as follows:

5½ x 7½ out of 22 x 32 or 32 x 44
5¾ x 8½ out of 24 x 36 or 36 x 48
6 x 9 out of 25 x 38, 38 x 50 or 36 x 48
6¾ x 10 out of 28 x 42 or 42 x 56
7¾ x 10½ out of 32 x 44 or 44 x 64
8½ x 10¾ out of 35 x 45
8¾ x 11½ out of 24 x 36 or 36 x 48
9¼ x 12 out of 25 x 38 or 38 x 50

The untrimmed size of the book determines the size of the sheet that must be sent to the pressroom. While a 16-page book trimmed to 6 x 9 inches could be printed on a sheet 24 x 36 as far as actual paper area is concerned, the book would be smaller than 6 x 9 after it had been trimmed at the top, bottom, and on both sides.

Therefore, the untrimmed size of each page should be 6¼ x 9½ inches. The 16-page form usually is imposed four pages wide and four high, so that the length of the sheet is 25 inches and the width 38 inches.

For standard book work, there are a number of different impositions. The one to be used is determined first of all by the number of pages to be printed on the sheet and the number of pages in each of the signatures in the book.

Collaboration a key factor

The number of pages in each signature depends generally upon the weight and finish of the paper and the total number of pages in the book. Signatures of 16 and 32 pages are most generally used in book work, although for certain jobs they may go up to 64 or down to 8. The number of pages to the printed sheet depends on the relation of the page size to the sheet size.

It is extremely important that close collaboration be maintained between the binder and printer in planning imposition. The binder knows how the pages should be imposed to be handled most efficiently on his folding machines, and should furnish the imposition with his folding machine guide plainly marked.

The printer should check the binder's imposition to ascertain whether it conflicts with any peculiarities of lock-up, grain of paper, press, or sheet size. The printer also should make certain that the imposition is such that the grain of the paper runs parallel to the backbone of the book.

Another important point is that the press guide on the printing sheet offers becomes the binder's gripper edge, and the printer's gripper edge becomes the binder's guide. In cases where the sheets are slit on the press, the slit edge should be the binder's guide.

Terms and references

The form, size, and general style of a book, including the face of the type, the quality of the paper, and the character of the binding, is called the format.

A form is the plate or layout from which the sheet is printed.

A signature is a section of the book proper, all pages of which were printed on one sheet. More than one signature can be printed on a sheet.

A folio is the page number.

Scoring is the creasing of heavy stock to facilitate folding.

A tip is a sheet that is pasted into the book. The pasting edge always should run with the grain of the stock.

A wrap is a folded sheet that folds around another signature. The inner section is called the "insert" and the outer section the "wrap."

In shop language, printed forms are referred to as:

Print one side, print work and turn, print work and tumble (also known as work and flop), print work and twist, print sheetwise, or print and back-up.

Forms in which only one side of the sheet is printed—such as office forms, labels, posters, and maps—have no particular complications or special problems.

Work and turn forms

To print "work and turn" means that the sheet of stock is printed both sides from one form by first printing half the total number of impressions on one side of the stock, then turning it over sideways from left to right and completing the run.

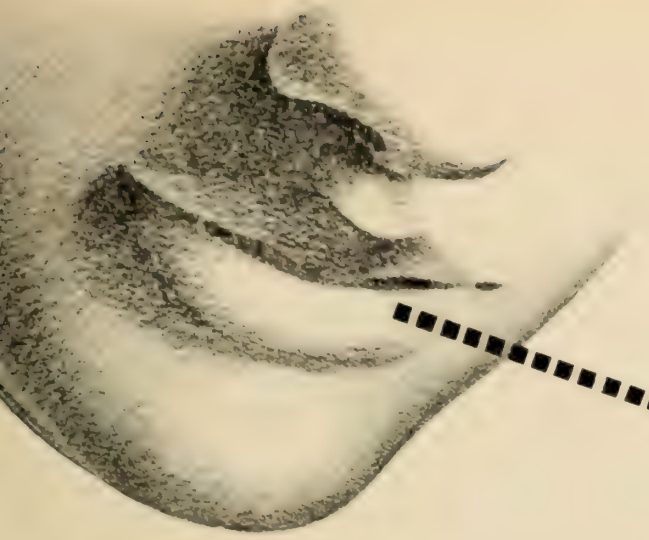
Forms that print work and turn usually are imposed from the center; that is, the lowest page number (folio) on the sheet (signature) appears in the center of the outside margin, instead of in the upper right-hand corner of the sheet. It is important to start the lowest folio correctly when the job is to be machine folded.

By making no change in the gripper margin, but by changing the side guide from right to left, one end and one side of the sheet always will be in the same position throughout the run.

When a layout man is marking a sheet to better visualize the form, he may start either in the center or the outside of the sheet, as the relative positions of the pages always remain the same.

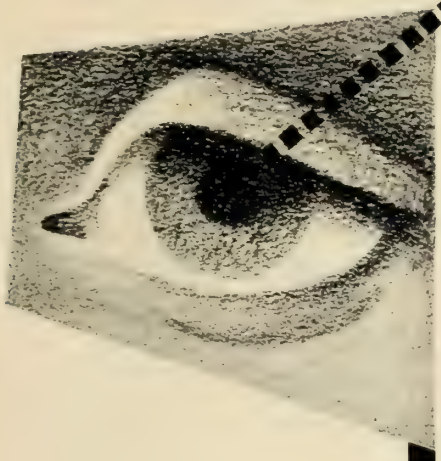
If there is any doubt as to the position of the pages, they can be proved by adding the folios of any two adjacent pages that lie back to back; the sum always will total one more than there are pages in the form. Thus, on a 16-page form, the figures will show that 16 and 1 are 17, 8 and 9 are 17, etc. This rule applies on all forms that will require side- or saddle-stitched work.

The safest practice is to obtain a folding dummy from the bindery for any layout and mark up the pages, indicat-





telling your story



It may be straight selling, good will, information, promotion or reader interest. Whatever your story is; no matter how good it is; like all stories, it's no better than the way it's told.

Chances are a good part of your story depends upon printing for its telling, and that's where we come in — equipped to set in type, print, fold, bind, mail and deliver just about everything in the printed line: Folders — Broadsides — Booklets — House Organs — Trade Journals — Magazines — Catalogs.

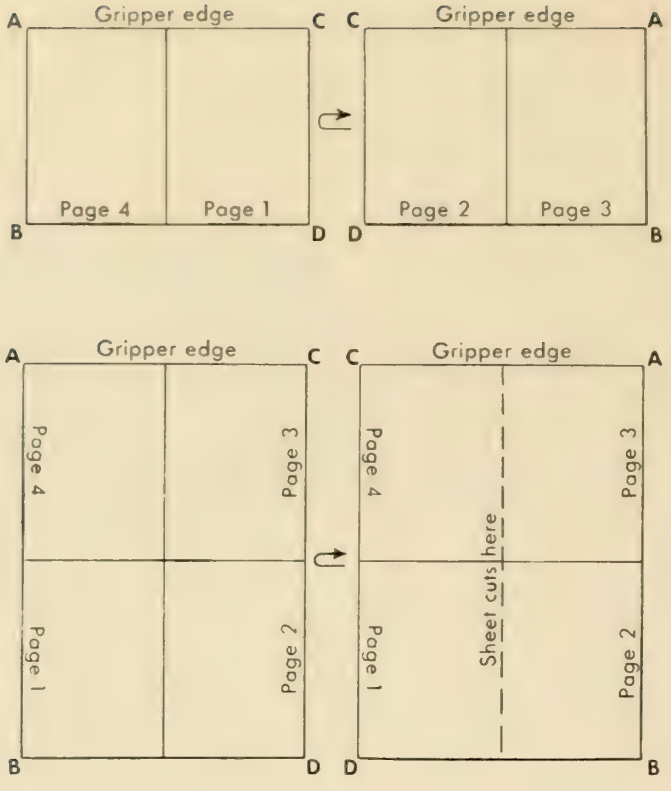
What's more — our organization is set up all along the line to see to it that your story gets the kind of telling you want it to get. Whether it's a tricky color requirement, a knotty production problem, a matter of distribution or reader appeal, the need for a layout, a copy slant or an effective format, we're prepared to help dig out the answer.

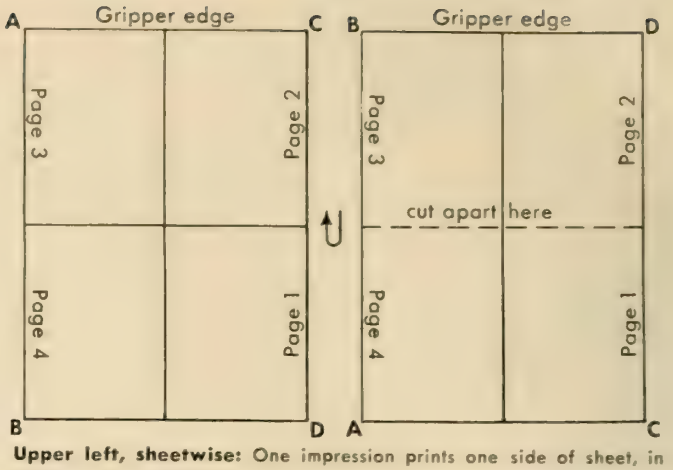
And if it happens that you know all the answers, you still can't print the job yourself, so bring it to us. You'll like the way we turn it out.

Blanchard Press, Inc.

418-428 WEST 25th ST., NEW YORK 1

Telephone: WAtkins 4-5700





Upper left, sheetwise: One impression prints one side of sheet, in this example pages 4 and 1 of the outside form. A second impression prints the inside form, pages 2 and 3, on the other side of the sheet. Sheet is turned to second side as indicated by arrow and lettered corners.

Lower left, work-and-turn: The same job pictured in the sheetwise illustration is used here. All four pages are locked up and put on press in one form. Sheet is turned as shown by arrow and lettered corners. When second side is finished, job is two-up and is cut apart as shown.

Above, work-and-tumble: Two-up are printed, as with work-and-turn and the whole four pages are in one form. The sheet is turned differently than in work-and-turn, as indicated by the arrow and lettered corners. When the second side is printed the sheet is cut apart as shown.

ing trim margins, etc. Lacking this, an imposition of a 16-page work and turn form may be marked up on a sheet of paper the same size as that on which the job is to be printed, or, if that is unobtainable, on one that is in proportion.

One fold is made down the center of the sheet the short way of the paper, then three folds are made, each at right angles to the next preceding one. This results in a sheet with 16 pages on each side. Page 1 is marked on the upper right-hand corner while the sheet is still folded, and the folios are marked by skipping the next two blank pages and marking 2 and 3, skipping two more pages and marking 4 and 5, etc., until all the pages are numbered.

When the sheet is spread out flat, all the pages will appear on one side, giving a picture of the form if it is to be examined for layout complications. This same method of folding and marking the sheet applies to all work and turn forms, regardless of the number of pages that are to be included in the signature.

Work and tumble forms

Sheets that "work and tumble," like sheets that work and turn, are completed without any change in the form, printing on both sides of the sheet from the same form. There is, however, this particularly important difference to be noted:

Sheets that print work and turn simply turn over from left to right; the side guide is changed, but the gripper edge of the sheet remains the same throughout the run. On sheets that must be tumbled, both edges of the stock are fed to the gripper, top edge then bottom edge.

To illustrate: On an eight-page form to fold to 8½ x 11 inches with two right-angle folds, the form would run work and turn on a sheet of stock 22 x 34 inches. But if the job were to be folded to 8½ x 11 inches with two parallel folds, the form would have to be printed work and tumble.

When a work and tumble job is to be printed, the stock must be squared by cutting before the printing is begun. This not only requires extra labor in cutting and jogging the stock, but also in adjusting the grippers on the press.

A tumble sheet has two copies of the same pages printed on it and in turning is turned the short way.

Work and twist forms

After the job has gone through the press once, the stock is both tumbled over top to bottom and also twisted around so that the former left-hand side is on the right-hand side. This method is seldom used, as considerable time must be spent in getting register on the press, and unless the run is long, it is impractical.

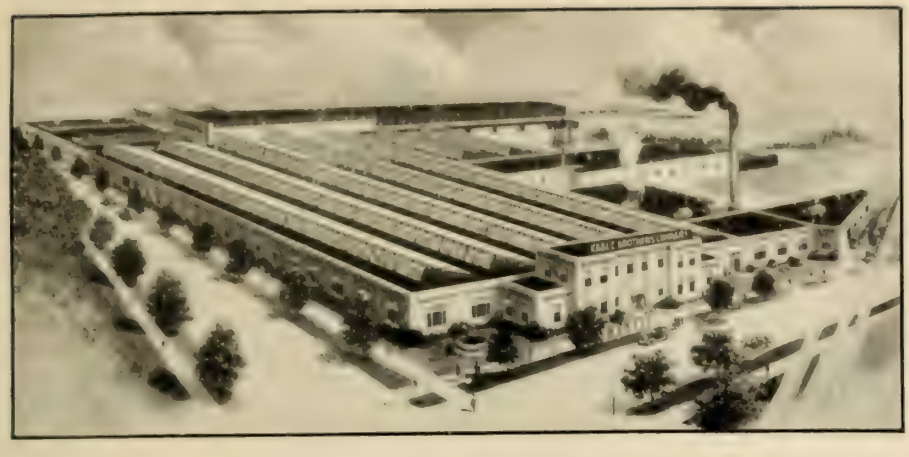
Sheetwise forms

This term means that after one side of a sheet has been printed, the form for that side is taken off the press and the form that is to print the other side of the sheet then is put on the press. In other words, it takes two forms to complete the sheet.

For example, to mark layouts for sheetwise imposition, take a 16-page pamphlet to be printed as two eight-page forms sheetwise. With a sheet of paper 19 x 25 inches or any proportionate size, three right-angle folds are made and Page 1 then marked in the lower right-hand corner of the folded sheet. Page 2 is marked on back of Page 1, etc., continuing until each page of the form is numbered.

It is a good rule to run all forms sheetwise when the nature of the work will so permit. To illustrate the advantage of this, assume that 20,000 copies of a 64-page book, trimmed to 6 x 9 inches, are to be printed from 38 x 50-inch stock and saddle stitched with wire. Only 32 pages could be printed at one time, and it takes two forms to finish the job.

These forms could be laid to print work and turn by putting the first and last 16 pages in one form and the center 32 in another form. For each form, there would have to be 20,000 press impressions, as well as a run of 20,000 through



HAVE YOU EVER MET A DILEMMA?

MANY A CUSTOMER, faced with a dilemma, turns to us for help. We love it! For 50 years,* many publishers of magazines from San Francisco to New York have turned to Kable Brothers Company for solutions to the complex problems of printing. Maybe that's why we like THE PRODUCTION YEARBOOK. It's a cross reference to most of the things there are to know about the technical side of printing. It is a good index of many of the things we know about the industry, things we must have at our fingertips in order to provide the best for our customers. Some of them print four pages a month. Some print more than two hundred. The run may be one hundred and sixty. It may be in excess of two million. Maybe it is run sheetwise on a Miehle vertical. Or perhaps it's big enough for the covers to be run on a five-color press. Or it's rotogravure with four colors on one side of the web. Or rotary letterpress with four different colors in each 32-page signature. It has a mailing list with a few, or thousands, of changes each month. It's a job involving split fountains, parallel 16s, straight 32s, or a 96-page delivered in six 16s.

TO GIVE them the best, we are consulting engineers†. We fit copy, make layouts, do art work, order engravings, paste dummies, manufacture electrotypes, print, bind, and mail—all under one control and by schedule. The list includes more than 125 periodicals. Space doesn't permit naming all of them, but all are handled with equal care, for we know only one law: Every customer, large or small, is treated exactly alike. Every single one is a favorite. So it has been for 50 years. So will it continue to be.

*Our first customer of 1898 is still doing business with us.

†Recently our production department showed one customer how, by a combination of runs, he could save more than $5,000 on one edition alone.

A few of the many we serve:

Aldens, Inc.
American Builder
American Fruit Grower
Contractors and Engineers Monthly
Eagle
Foreign Service
Grade Teacher
Hygeia
Locomotive Engineers Journal
Machine and Tool Blue Book
Model Airplane News
Moody Monthly
Moorman Manufacturing Company
Moose
Motorman
Movie Play
Nation's Agriculture
National Jewish Monthly
Outdoorsman
Perfect Circle Company
Philco Corp.
Polk & Co., R. L.
Popular Homecraft
Poultry Tribune
Railway Employees Journal
Royal Neighbor
Saint Anthony Messenger
Salvation Army—War Cry
Sears, Roebuck & Company
Secrets
Shoe Service
Sports Afield

These, and many more, are and will be produced economically on equipment augmented by more than a million dollars worth of machinery ordered and now being installed.

KABLE BROTHERS COMPANY

Letterpress **PRINTERS** Rotogravure

Plant and Home Office
MOUNT MORRIS, ILLINOIS

CHICAGO—185 North Wabash Avenue 420 Lexington Avenue—NEW YORK

the folder, or a total press run of 40,000 and a like total on the folding machine.

Folding is halved

But if the forms were laid out to run sheetwise, there would be a straight run of 20,000 on one side of the sheet only. The form then would be taken off the press and the unprinted side of the sheet backed up with the form containing the inside layout—the two 16-page sections that begin with Pages 2 and 18—and another 20,000 impressions completes it.

The makeready and running time would be the same whether run sheetwise or work and turn. But the folding time would be cut in half, and the job could be put on a double 32-page folder.

Unless a very absorbent paper is used, time is needed for the ink to dry before turning the stock over. If a work and turn form is used on a comparatively short run, not enough time elapses for the ink to dry, and the press must stand idle to await drying or the form must be removed, to be put on again later.

When there is an odd number of pages on the form, the job should be run sheetwise; this kind of run also is advisable where the ink is heavier on one side than that which is used on the other.

Some difficulties noted

There is comparatively little difficulty in mastering the imposition of forms that have four pages, or the following multiples of that number—8, 16, 32, 64, etc. On forms of 12, 20, 24, 40, and 48 pages, however, trouble may be experienced in folding sheets for marking the folios.

Where only parallel folds are made, there is little difficulty, but where right-angle folding is required, especially on 20- and 40-page forms, a shift of plates on the turn is necessary. This means that there must be extra flat cutting on the sheet, and extra folding and inserting in the bindery, which means extra costs.

A new size evolved

Twelve-page forms, if pages are in their proper proportion, will work and tumble unless the short dimension of the sheet is made the gripper edge. A sheet comparatively new in size, 26 x 29, and its multiple, 29 x 52, is now being made primarily for 12- and 24-page books that trim to 6 x 9 inches, or proportionately so. While the 12-page form would work and tumble, the 24-page form would run work and turn on this newest of sizes.

Forms of 12 and 24 pages, when imposed to bind without inserting, are a source of difficulty in the bindery, and more than ordinary care must be taken when laying out sheets to bind either as 12-or 24-page books. Paper for a 20-page form for a book to be trimmed to 6 x 9 inches would require a sheet approximately 25 x 47½ inches, while a 40-page book to be trimmed to 6 x 9 inches would require a sheet approximately 38 x 62½ inches.

Caution should be used in laying out either 20- or 40-page forms, not only to get the press sheet in proportionate dimensions, but likewise to insure that it will receive the correct folding.

Various complications

Forms that are to fold and bind oblong, that is, where the narrow dimension of the folded sheet becomes the binding edge, present some complications. On a 32-page book, there would be one right-angle fold, then two parallel, then another right-angle.

The folded sheets are not as compact as when folded regularly. There also is not as much trimming room on a book that trims to 9 x 6 oblong as there is on one that trims to the regular 6 x 9. On the 6 x 9 book, there would be one-quarter inch at the top, bottom, and side for trim, while on a 9 x 6 book, there would be only one-eighth inch for trim at top and bottom and one-half inch at the side.

While there would be more than enough at the side, one-eighth inch at top and bottom is hardly enough, especially on an oblong book. If the size must be exact, it is necessary to use a larger size of stock on the oblong book than would be required for the volume that measures 6 x 9.

To mark the folios on a sheet of paper for an oblong book of 16 pages, to be printed work and turn, make one fold down the center the short way of the sheet, then two parallel folds, and one right-angle fold.

Mark Page 1 in the lower right-hand corner; skip two blank pages, then mark Pages 2 and 3, and so on until all pages are numbered. When the sheet is spread out flat, all the pages will appear on one side, and the folios of two adjacent pages that lie back to back will total 17.

To mark the imposition for a 32-page oblong form to be run work and turn, take a sheet of proportionate dimensions and make one fold down the short dimension of the sheet. Then make one right-angle fold, two parallel folds, and another right-angle; mark Page 1 in the lower right-hand corner, skip two and mark two, and so on until all the pages are folioed.

Books that vary from proportionate sizes, such as a pamphlet 3¾ x 8¾ inches to fit a No. 10 envelope, or an 8 x 9 to be folded down the center in the style of a time table, present complications that do not occur in books that conform to proportionate dimensions.

Two or more up

Work that binds two or more up does not always effect a saving in the press work, but it always produces economies in the folding operation. Whether hand- or machine-folded, there are no more folds on work that folds two, three, or more up than if folded only once.

In planning work, it must always be kept in mind that it requires extra plates, extra makeready, and a larger press to do gang printing, and it must be determined whether all these extra items can be offset by the saving achieved on the folding and cutting machines.

When the completed book is not too thick for cutting by simply trimming the top and bottom of the stack and cutting the books apart with one cut, a saving in stock can be realized.

On forms that print more than one up, the folding of the sheet for marking the imposition of the pages varies from that used when printing only one up. Thus, on a 16-page work and turn form to be bound more than one up, there may be one right-angle and two parallel folds, or three parallel folds. On a 32-page work and turn form, there may be two right-angle and two parallel folds.

Three types of folds

The usual method of folding book signatures is by right angles; that is, a fold is made at right angles to the one preceding. However, there are many other kinds of folds, the most common being the parallel. On a signature using this method, all folds are parallel to each other and should run with the grain.

Modifications of this type are the over-and-over and the accordion folds. In an over-and-over fold, instead of the first fold's being made at the middle, it is made by turning the end page to superimpose over the page beside it. The same operation is repeated on all other pages until all folds have been made, the turning being done in the same direction on each one of the successive folds.



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Accordion folds are made by starting at one side of the sheet, as on over-and-over, and continuing toward the other side, but the turning direction is reversed on each fold. Accordion folds are common on heavy stock, and on elongated maps or illustrations, as the sheet is easier to open and close, and reading matter appears in sequence across the sheet, facilitating its handling.

Special parallel folds

Combinations classed as parallel have one or more folds at right angles with the others, usually with the last two or three folds parallel. A layout of this kind generally is used for binding two or more up and its adaptability for this purpose is obvious.

Page arrangement for multiple binding folds is advisable on a combination of right-angle and parallel folds because a better proportioned sheet can be obtained for printing and also because it can be fed into and delivered from the folder more easily than when all folds are at right angles to each other.

Folding for oblong books

The number of pages in a folded signature may vary from four to 64. The right-angle and parallel folds that can be made into signatures without complications are 4's, 8's, 12's, 32's, 48's, and 64's. There also are a number of other folds, such as 6's, 10's, 20's, and 28's that can sometimes be made, depending upon the binder's equipment.

Signatures: 16 vs. 32

Books most commonly are folded in 16-page or 32-page signatures. If the book does not exceed 1 to 1½ inches in thickness and is to be subject to rough handling—such as reference and school books—it is preferable to bind it in 16-page signatures.

The weight of the stock has an arbitrary influence on the number of pages that can be folded into a signature. The more thread that is used in sewing a book, the greater the proportionate strength. A book sewed in 16-page signatures not only will be stronger but also will shape better for rounding than one that is sewed in the bulkier 32-page signatures.

When the book is more than 1½ inches thick, and of hard finished stock, it will be thicker at the backbone when sewed in 16's than in 32's because there will be double the amount of thread. However, 32's are to be preferred over 16's in thick books, for a thick back will cause buckling or doubling when being pressed or smashed, which makes it difficult to fit into the cover.

When price is a factor and the book does not face severe usage, the folding, gathering, and sewing in 32's amounts to just one-half as much as it does in 16's, and effects a considerable saving in manufacturing. Any book printed on thin paper rarely is sewed in less than 32-page signatures, and those on India paper are sewed in 64's.

Owing to the fact that signatures lie closer together in 16's than they do in 32's, the 16-page signatures are preferable in books whose edges are to be gilded, stained, marbled, or burnished. The 16-page signature also will lie flatter when the book is opened.

Special fold 4's and 8's

Four- and eight-page signatures seldom are used in books, and then only when some special condition makes them necessary. When printing a job in 16's, 32's, or larger, and there are some color pages in the signature, to effect press economies an attempt should be made to place the color pages in one smaller signature, such as a four or an eight.

In some cases, the total number of pages may not come out in even 16's or 32's, thus necessitating the printing of an odd form of a smaller number of pages. These odd forms usually are wrapped around another signature, as the tension on a sewing machine is difficult to adjust for thin signatures, and loose sewing can be expected to result.

Undesirable 6's and 12's

Six- and 12-page signatures of the ordinary folds have a loose leaf folded into the last, or binding, fold. This prevents the use of such signatures in books that are to be sewed or saddle stitched.

The sewing thread or wire will not catch this loose leaf, and after trimming, there will be a loose two-page leaf in each book that will fall out when opened. Such signatures offer no difficulties on a patent bound or side-wired book, as they are held in place by the wire or glue as is any other signature.

This kind of signature usually causes some trouble on the machine because of folding in the flap end. If the margin varies, the edge of the sheet varies from the fold margin of the next parallel fold.

24's and 48's difficult

Twenty-four and 48-page signatures also are difficult to handle and generally are used only when necessary to complete a book. However, they can be used in sewed and saddle bound books, as the flat end does not come on the binding margin and creates no problem in that respect.

Because of the difficulty of folding in the flap end of signatures of 6, 12, or 24 pages, they are not commonly used. There are times, however, when this method is the most economical, and when it is used, the paper is cut accurately to size before printing so as to obtain even margins in the folding.

Wrinkling and its remedy

When three or more folds are made at right angles to each other, there is a tendency toward wrinkling in the folds. This is especially true of heavy stock, because the distance around the fold on the outside is greater than on the inside, and the pages, being held together along the folded edges, cause the paper to buckle or wrinkle on the inside.

This buckling can be eliminated by slitting the sheet (when hand folding) or perforating (when machine folding) along the fold preceding the final one. Slitting reduces hand production about 25 per cent on a three-fold signature.

On heavy stocks it is difficult to make the fold in exactly the right place without breaking or cracking the paper. To avoid this, as well as to facilitate folding, heavy stock, or stock printed against the grain, should be scored along the folding line of the sheet.

Grain of paper

Forms should be printed on the sheet so that the last fold will be parallel with the grain of the paper. Paper folds more easily and neatly with the grain, and the book in most cases will be stronger. Stock—especially when coated—gives trouble if folded against the grain. In specifying stock, too much care cannot be taken in specifying grain direction.

Inserts, tips, wraps

The preparing of signatures for binding is called "sheet work," and includes such operations as inserting, tipping, preparing end sheets, stripping or reinforcing end signatures, and separating. Nearly all this kind of work is done by hand.

Layout of folios

In laying out the form for printing an insert signature, the pages must be arranged to bring the folios in numerical sequence. To do this correctly, the lock-up man must know the exact make-up of the book before he can lock up the forms. He also should know the best practices of sheet work to lay out the forms to best advantage for the bindery.

Bindery conditions determine the method, and if signatures are improperly imposed, the bindery has no means of correcting the error, as its work must exactly follow the folio arrangement.

Open and closed signatures

Signatures with alternating folds at right angles will have the leaves at one end held together by the fold, as will some of the leaves on the front edge. The manner in which the leaves are attached depends on the number of folds in the sheet.

Signatures folded at the ends or side are called closed-end or closed-side signatures, and appreciably slow the speed of inserting at those positions where the signature has one or more closed ends or sides. Those with the head of the page at the closed end are termed "closed-head" signatures, and those open at ends and side are called "open-head."

Inserting

Inserting into open-head signatures between the leaves and other than in the center is faster than into similar positions in closed-head signatures, as the leaves, being unattached, open more freely.

Handling can be saved, if the insert is to be placed between the center pages, by having the press fold the sheet about one-eighth inch off center, thus leaving a projecting flap on the front edge. This makes it easy for the inserter to open the leaves of the open-head signature.

Inserting tips

Tipping is the pasting-in of a two- or four-page insert on a signature. This is most commonly done with illustrations printed on a stock different from that of the body of the book.

Margins must be large enough to allow for pasting and trimming the tip with the book. If a folded tip, it must be with the book. If a folded tip, it must be be cut open when the book is trimmed. The tip should be printed so that the grain of the paper will run parallel to the backbone of the book.

Because certain positions in a folded signature are more easily turned to and opened, it is more economical to place insert pages in those positions. Usually a two-page insert will tip or paste on. A four-page signature, if properly placed, can be sewn in. Sewing generally is less expensive than tipping.

Because of various press conditions, such as position of grippers and guides, certain combinations of pages of a form cannot bleed (unless a large enough sheet is used), while other pages or combinations of sides of pages can do so. This will vary with the printer's equipment, ability to shift the position of the grippers or guides, etc.

While the printer should always be consulted regarding the positioning of bleed pages and double-spreads in a form, the imposition diagrams accompanying this article indicate in a general way the best places for double-spreads, tip-ons, and sewed inserts.

While the imposition diagrams and the data they contain are generally accurate, they are not intended as the basis for hard and fast production rules. Ingenious printers and binders can work out an infinite variety of impositions to suit almost any production problem, and no job should be planned and put into full production without consulting them.

Key to imposition diagrams on pages 268 and 270

In dummying up a book, booklet, or pamphlet, the production man often has to accommodate inserts, double spread pages, bleeds, etc. To position these most economically, he should know his imposition and know the best spots to locate them. These are indicated on the accompanying diagrams in code form as follows:

_____efficient place for 2- or 4-page tip or wrap

←——→ ideal space for double spread, sewn, or stitched insert.

_____indicates cutting of sheet on press or during folding.

A: An eight-page work-and-turn form, two right-angle folds. Like other work-and-turn forms, this sheet when completed yields two signatures. It is slit before folding, as indicated by the dashes.

B: A 16-page work-and-turn form imposed from the center. Slitting edge on the press becomes the gripper edge in folding. For use on Cleveland folder.

C: A 16-page work-and-turn form imposed from the outside. This imposition is used on a Dexter folder.

D: An eight-page folder with two parallel folds. This form prints work-and-tumble. When opened up, pages 2, 3, 4, and 5 read across as one spread.

E: Eight pages work-and-tumble, two parallel folds.

F: A 12-page form to print work-and-tumble. Vertical cut down middle of sheet is made before folding, yielding two 12-page signatures. Each signature can be folded without inserting or further slitting, binder's equipment permitting. If necessary to fold and bind as an eight and a four, the top four pages may be cut off as indicated and will wrap around the inside eight. Pages 3 and 10 are good for wraps and tips only when bound as an eight and a four.

G: Top diagram is the outside eight of a 16-page sheet printing sheetwise. Gripper edge for the Dexter folder on top of sheet, for the Cleveland folder on lower edge. Lower diagram illustrates the inside form that backs up the outside form, thus completing the sheet. Upper gripper edge is for Cleveland folder, lower for Dexter folder.

H: A 24-page form to print work-and-turn. The signature requires four folds on Cleveland folder. The first two folds are parallel, the third at right angles to the second, the fourth parallel to the third parallel.

I: A 20-page work-and-tumble form bound as one eight- and one 12-page signature. A vertical cut yields two complete 20-page signatures. Horizontal cut breaks 20-page signature into one 12 and one eight.

J: A 16-page work-and-turn form for an oblong book. Although four folds are required, three parallel accordion folds and one angle fold keep wrinkling to a minimum.

K: Two sheetwise 16-page forms back each other up to form one 32-page signature. Two right angle and one parallel folds are made. The sheet is slit as indicated by dashes in diagrams above. Outside 16 (pages 1-8, 25-32) wrap around inside 16.

L: A 64 page book imposed to be printed as 32-page sheetwise forms. It is slit on the press and bound as two 32-page signatures.

M: Similar to figure N, this imposition is for 32-page forms printed work-and-turn. Printed sheet is slit before folding. Three angle folds are made, then book can be stitched two deep before slitting.

N: 16-page forms, work-and-turn, two up. Sheet slits down middle on press to yield two 16-page signatures on each half. After one angle fold and two parallel folds, book can then be stitched two deep before cutting.

O: A 32-page work-and-turn form folded as two 16's. Known as a double 16, this imposition folds and slits on a Dexter machine. The inside 16 pages insert into the outside 16 (1-8, 25-32).

P: A 64-page form printed as two sheetwise 32's. Inside 32-page signature is slit after folding and inserted into outside 32 (1-16, 49-64). Three angle and one parallel folds required.

Q: 16-page work-and-turn forms, three up. Three parallel folds are made and then the three signatures are cut apart from each other. Gang works of this nature save money in the bindery.





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Impositions, continued: typical printing forms

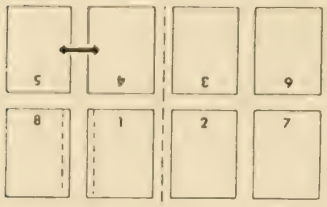


Figure A

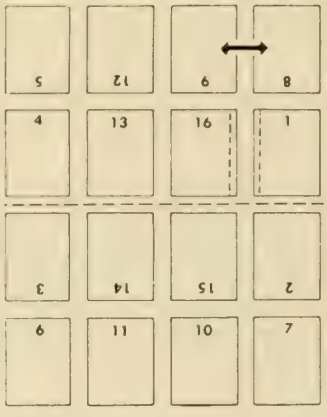


Figure B

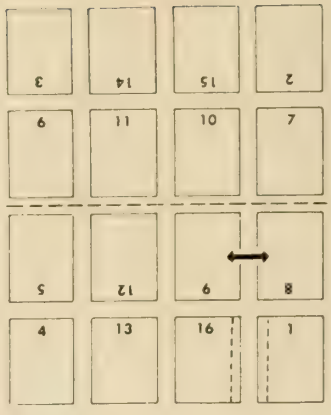


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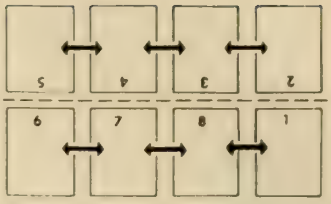


Figure D

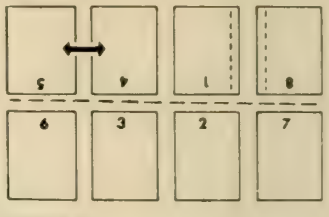


Figure E

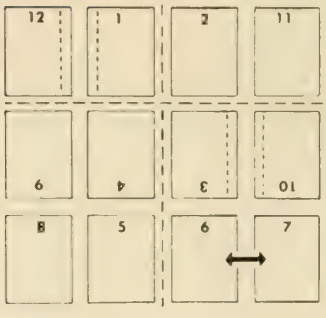


Figure F

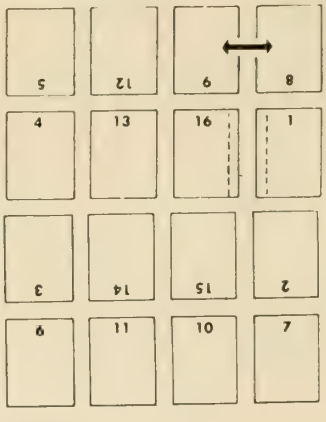


Figure G

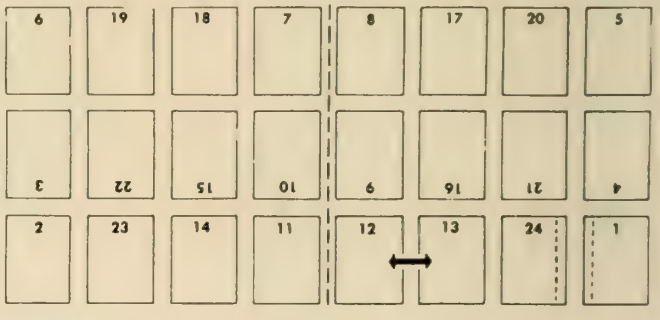


Figure H

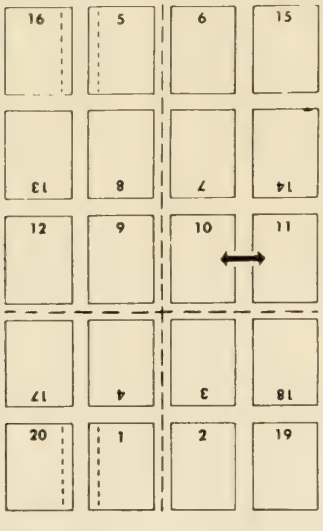


Figure I

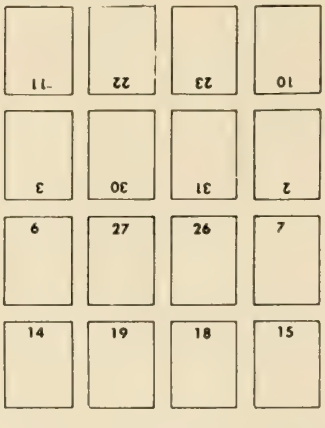
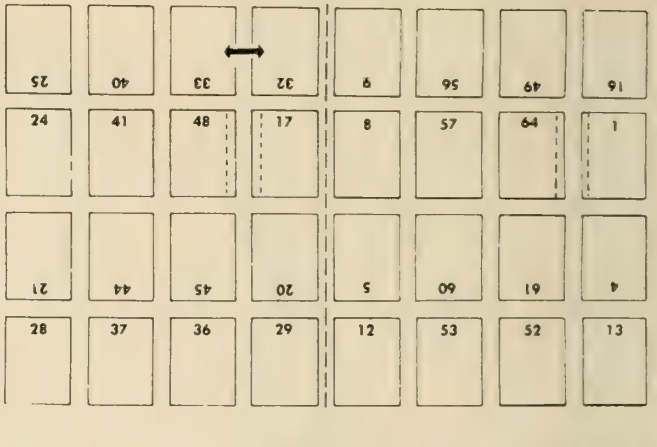


Figure K



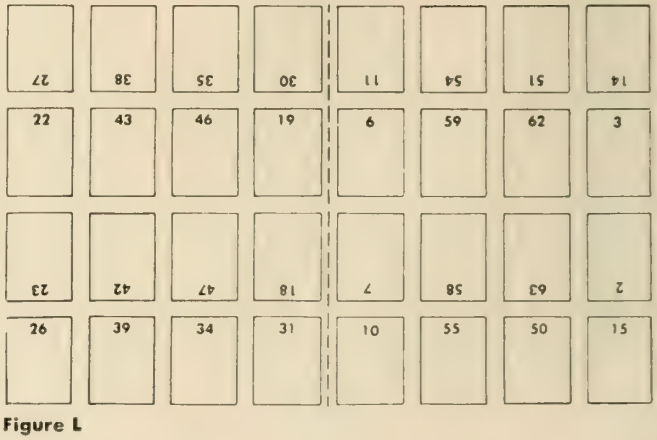


Figure L

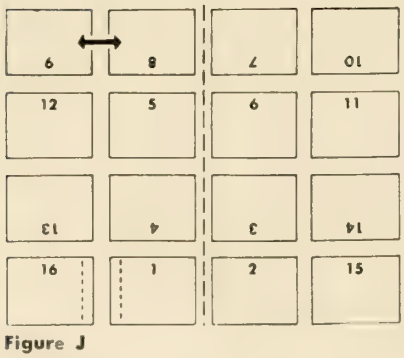


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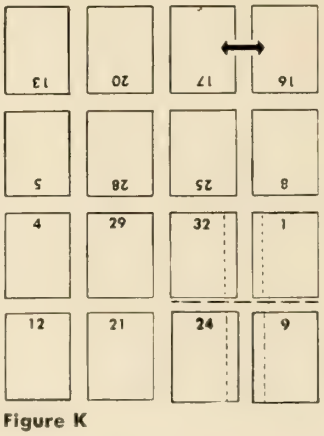
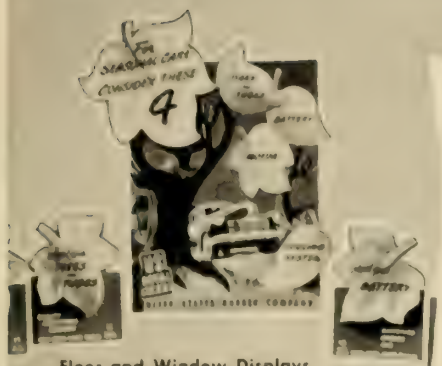


Figure K



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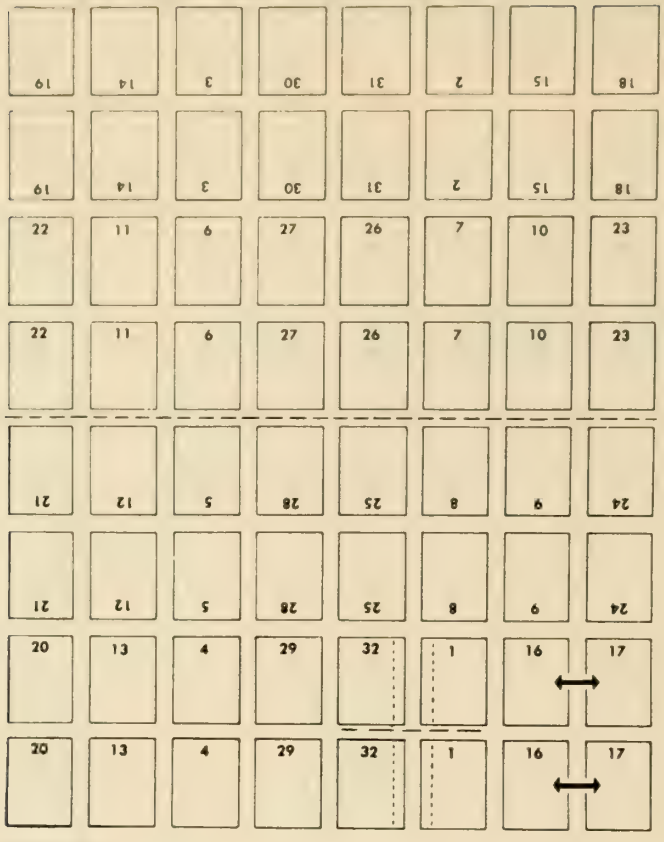


Figure M

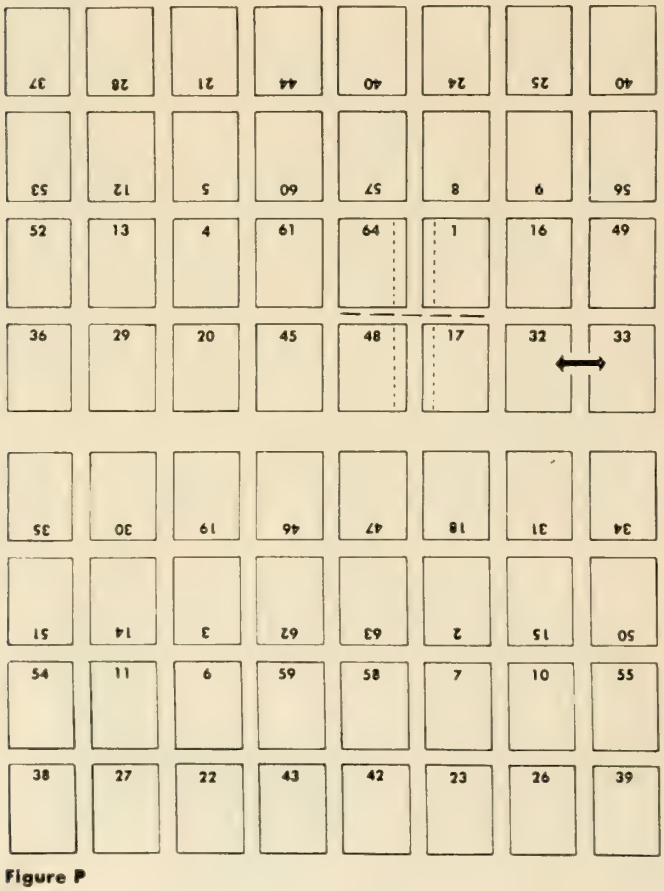


Figure P

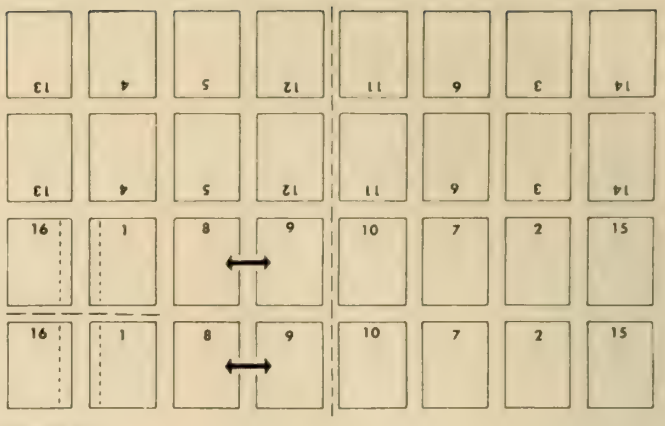


Figure N

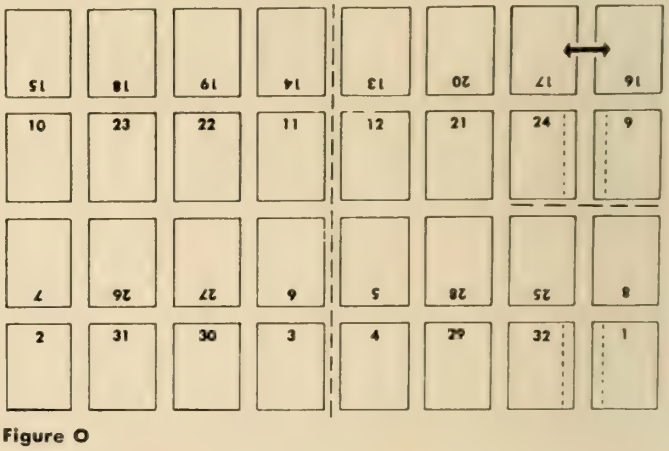


Figure O

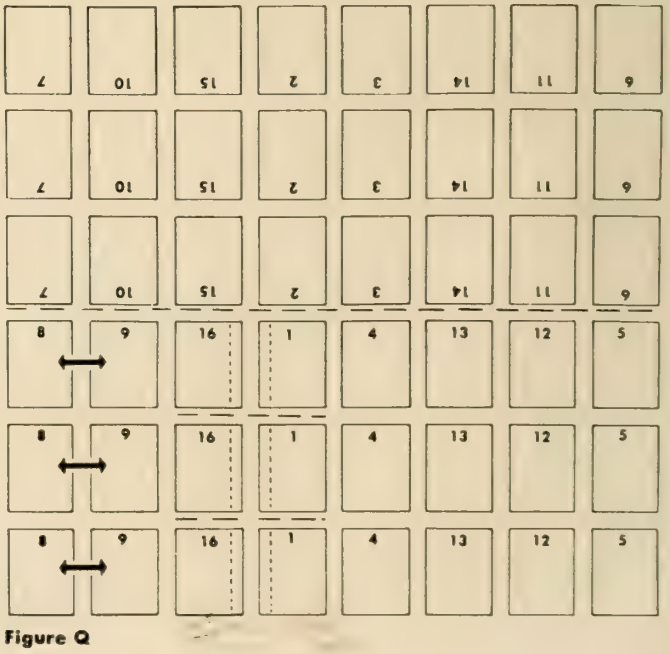


Figure Q

This is our 50th year



WHO MEASURES TIME BY CLOCKS?

All of us depend on clocks and watches to meet the appointments in our daily routine. But when we consider our fifty years in the printing business, hours, seconds and minutes fade into inconsequential fractions of Time. We remember the business friendships we have made, the clients who came to us and stayed with us. Their names are near the top in American industry. It is not that we want to shine in their reflected glory so much as to suggest that we must be good printers and work to their utmost satisfaction or they would have forsaken us in their eternal battle with competition. So we ask you to turn this page and note some of the names of the clients we serve. We are proud of them. You may trust their judgment.

EILERT PRINTING COMPANY, INC.



SOME OF THE NAMES OF CLIENTS WE SERVE

ABERCROMBIE & FITCH CO. • AMERICAN AGRICULTURAL CHEMICAL CO. • AMERICAN BANKERS ASSOCIATION • AMERICAN BROADCASTING CO., INC. AMERICAN INSTITUTE OF BANKING • AMERICAN MOLASSES CO. • BRIGGS & VARLEY, INC. • DUELL, SLOAN & PEARCE, INC. • DUN & BRADSTREET, INC. INTERNATIONAL BUSINESS MACHINES CORP. • KEUFFEL & ESSER COMPANY • KOLLSMAN INSTRUMENT DIVISION OF THE SQUARE D COMPANY NATIONAL BROADCASTING CO., INC. • NATIONAL CONCERT & ARTISTS CORP. • ROBINS CONVEYORS INC. DIVISION OF HEWITT-ROBINS INC. ROCKEFELLER CENTER, INC. • SOCONY-VACUUM OIL CO., INC. • STANDARD BRANDS, INCORPORATED • STANDARD OIL COMPANY (NEW JERSEY)

EILERT PRINTING COMPANY, INC., 318 WEST 39th STREET, NEW YORK 18, N. Y.

Wet printing

Four colors are printed almost simultaneously in high speed process, which differs from dry printing process and requires special plates, ink, and paper

George H. Carl

Wet printing is any process of printing where wet ink is printed on top of wet ink. It occurs in two-color printing when in a single revolution of the press, a first-down color has superimposed on it a second color, usually black. It occurs in four-color printing when in a single press revolution two or more of the four inks are superimposed in the same area of the paper.

The speeds of these presses range from relatively slow machines of a thousand revolutions an hour to very fast ones of 12,500 revolutions an hour or even more rapid. The process requires special paper, special inks, and specially prepared engravings.

The wet process of printing was developed to increase the output from printing presses. It is used primarily for long runs, usually of the regularly scheduled types such as periodical publication printing. The term is commonly applied to letterpress printing.

The big rise in magazine circulation, in advertising volume, in number of pages per issue, and in the proportion of four-color to black-and-white made necessary a faster method of printing more pages of four-color on vastly larger press runs.

The quality of the printed matter produced by the wet process generally does not equal the quality of printing produced dry. To understand how wet printing differs from dry printing, we must have clearly in mind exactly what happens when an impression is made on the press in both methods of printing.

Dry printing principle

On the accompanying colored inserts, Illustration No. 1 is a pictograph drawing of dry printing. There are two cylinders, one is the plate cylinder that is inked; the other is the impression cylinder. The paper travels around the impression cylinder and when it comes into contact with the plate, the ink is transferred to the paper. This procedure is repeated for each succeeding color.

Because each plate cylinder has its individual impression cylinder, unlimited makeready for each color is possible to obtain fine printing quality. Makeready is possible not only under the plate on the printing cylinder but also under the tympan sheet of the impression cylinder. Because each color is printed separately, each succeeding color being printed after the previous color has dried, there is no more ink problem here than in single-color printing.

The makeready that makes the greatest contribution to printing quality is that under the tympan sheet. This is called the packing. The pressure required by each tone to facilitate the transfer of that tone's ink to the paper is obtained in dry printing by adding thin layers of paper to the packing.

The packing thickness can thus be adjusted so that heavy tones get most pressure, highlight areas very little pressure, and medium tones a moderate pressure as the plate is printed. By this method of makeready, printing quality is controlled with relative precision.

Wet printing principle

In four-color wet printing (Illustration No. 2) there is no impression cylinder for each plate cylinder. Rather, a much larger impression cylinder is used to accommodate five plate cylinders.

The paper web travels around a large impression cylinder and the yellow plate transfers a layer of ink to the paper; the red plate then transfers a layer of ink on top of the wet yellow ink; the blue plate adds a layer of blue ink to the wet yellow and red; and finally the black plate adds the fourth layer of ink.

Because the area on the tympan that falls underneath the four-color page to be printed travels around the impression cylinder with the paper and the same area is used for the printing of each color on that page, there is only one makeready for four different plates.

It is obvious that makeready under the tympan cannot be relied on to improve quality in this process. Underlay makeready, which is not too effective since variations in pressure must be transmitted through approximately $\frac{1}{4}$ inch of metal, is not restricted; but it can be seen readily that little can be done in this way to help fine tone areas or vignettes and highlights. In fact, the only purpose of this makeready is to bring the plate up to the press line.

Pre-makeready

To overcome this lack of facilities for makeready, several processes of surface makeready have been developed for press plates. These plates are known as treated plates or pre-madeready plates. In large runs, original engravings are never used on the press. From the original a mold is made, and from the mold an electrotype is produced.

The electrotype is backed up with metal to thickness several thousandths of an inch more than the final press plate thickness. To accomplish this treating or surface makeready, the electrotyper now takes a sheet of laminated paper made up of three layers of varying thickness. An impression of the plate is made on this laminated sheet.

Where highlights occur in the printing, the three thicknesses are permitted to remain. Where middletones occur in the illustration, one layer of lamination is removed. Where solid areas appear in the illustration, two layers of lamination are removed. This sheet is mounted on the face of the electrotype and a second sheet cut directly opposite to the first is mounted on the back of the plate.

Pressure is applied to force the highlight areas down, to allow the medium areas to remain, and to force heavier areas up to the surface. The plate is then trimmed on the back so that the metal from the highlight that has been squeezed into the opening on the bottom sheets is shaved smooth. If the plate is to be curved, the sheet on the face of the plate is kept on until the curving is

done; then the backs of the plates are shaved again to bring the plate to proper plate thickness.

Some pressmen believe that this pre-makeready is the solution to the makeready problem in wet printing. Others believe that it is not the answer, that it does not take into account the variation in the thicknesses of ink layers, which definitely must be considered in wet printing makeready.

Most printers believe that the best way to achieve a good printing result is to have the original plates made right to begin with, then proved wet without makeready; and if this is done by the engraver, the printer can reproduce the job without trouble.

However, if makeready is used by the engraver on the proof press, it is impossible for the printer to duplicate the same makeready. (See Cross-Reference Index on Pre-makeready.)

Ink trapping

One of the big problems of wet printing is to get one ink to print on top of another ink. To accomplish this, the inks have to be formulated exactly right. If they are not, the second color to print may pull the first color off the paper, or the third may pull off the first and second color.

If the first-down color pulls the second color off the plate and if the first two pull off the third and the first three pull off the fourth, then the inks are said to be trapping properly. (See Cross-Reference Index on Ink Trapping.)

Another problem is that of ink intensities. This explains why specially prepared engravings are needed. In the engraver's separation, a dark solid area in the art may call for a solid yellow, a solid red, a solid blue, and a solid black. Four layers of ink would be used in dry printing for this area of the art work.

Ink film thickness

In wet printing, four solid layers of ink cannot be controlled on the press. A film of wet ink averages somewhere between .0004″ and .0005″ in thickness. An aggregate of four layers of ink would range from .0016″ to .0020″ in thickness when on the paper.

When it is considered that the depth of etch in the highlight would be .003″ and that the depth of etch in a 90 per cent tone would be .0015″, it can be seen that a fourth-down plate with a 90 per cent tone might be printing on a layer of ink thicker than the depth of etch of this area in the plate.

When impression occurs on the press in such a case, a lateral flow of ink results and the etched wells in the plate become filled up and you start printing intaglio, which is printing the bottom of the dots instead of the top.

When this occurs you have lost control and the job suffers from too much intensity of ink. To overcome this, specifications for engravings for wet printing all call for some maximum aggregated intensity of the four plates, usually a total of 200 per cent coverage, or the equivalent of two solid layers of ink, in any area; or, expressed in terms of total thickness of the four ink films, .001″.

Eliminate excess color

The problem of making wet printing possible, therefore, falls heavily on the engraver. He must eliminate excess color. He uses an entirely different color theory in making engravings for wet printing than for dry printing.

In the latter, he makes a heavy yellow plate, a heavy red plate, a heavy blue plate, and a light, accentuating black plate. In wet printing, his problem is to tell the story in color with as little ink as possible. The color theory he must use to make engravings that will not exceed in any area the 200 per cent maximum aggregate intensity of the four colors is this:

An 80 per cent yellow, 80 per cent red, and 80 per cent blue will yield an 80 per cent gray. A 40 per cent yellow, 40 per cent red, and 40 per cent blue will yield a 40 per cent gray. A solid yellow, red, and blue will give solid black, etc.

In an area in the illustration calling for 80 per cent yellow, 80 per cent red, and 80 per cent blue, this adds up to 240 per cent intensity. By removing 40 per cent of the yellow and equal amounts of red and blue and adding 40 per cent of black, the engraver can keep relatively the same tone as he had before, only this time he has 160 per cent aggregate intensity instead of 240 per cent.

In that way, the coverage has been cut down and brought within control of the press, where before it was out of control. In practice, the reduction of color is not made on this exact percentage basis, but the principle of reduction is illustrated here.

The engraver can do more to help the quality of wet printing than any other factor in connection with the process. To make plates right for four-color wet printing is a complicated and costly job. Wet plates properly made are worth much more than dry plates.

The principal advantages of two-and-two wet printing (where two colors are printed wet, permitted to dry, and two more colors then printed wet), is that twice as much ink can be controlled as in the four-across process where four colors are printed almost simultaneously.

But register problems, virtually nonexistent in four-across printing, do develop and for that reason the two-and-two process seldom is used on lightweight sheets of paper that are subject to changes because of humidities, temperatures, etc. With heavy sheets of paper there is practically no register problem, which is why covers often are printed by the two-and-two process. Greater ink intensity means more gloss, more snap, and greater richness of tone.

Copy for wet printing

The best copy for wet printing should avoid vignettes and heavy color areas. Carbros should not have saturation of colors. Color separation negatives should be on the soft side, rather than contrasty. In actual practice, however, it is not always possible to get this kind of copy. One reason is that the copy must be prepared for use in wet and dry printing.

In most cases, the large press runs of wet printing justify special copy, and photographers and artists are becoming more and more accustomed to supplying the right kind. Photographers who must supply prints or separation negatives especially made for wet printing will often make an extra "regular" set for the file. The extra set is better for dry printing and the other printing processes. They have found that clients usually will call a short while later for the prints or negatives used for making the plates.

Use experienced engraver

The best assurance the advertising buyer can have that he will get satisfactory engravings for wet printing is to work with an engraver who is experienced in making such plates, preferably one who has produced satisfactory plates for publications that print by the wet process.

Mention was made above of developments in the industry that created the need for wet printing. The following data show the rate of growth in recent



Printing of Distinction

Quality is our daily watchword . . . Dependability and good service go hand in hand with our conception of *good* printing as shown through many years of cumulative printing experience.

Your printing requirements should include the distinction and prestige of quality production. Our modern facilities and experienced craftsmen are here to give you the kind of printing you want.

Completely Equipped Plant
for Dependable Service

MAGAZINES

CATALOGS

HOUSE ORGANS

BOOKLETS

BROADSIDES

ADVERTISING LITERATURE

L. MIDDLEDITCH CO.

Printers of Advertising Literature

75 VARICK STREET • NEW YORK 13, N. Y.

For an example of our fine work turn over this page . . .



OUR facilities are organized to produce printing to meet your requirements promptly and efficiently. To summon a representative to discuss your printing problems write or phone . . .

L. MIDDLEDITCH CO.

75 VARICK STREET • NEW YORK 13, N. Y.
WAlker 5-4044

periods of the four important factors that determine the volume of four-color printing publication printers must produce.

Why wet printing?

The first is from a study of all magazines appearing in the general and farm magazine sections of Standard Rate & Data for the last six months of 1933 and 1943. This shows that an average number of aggregate copies sold per issue was 88,500,000 in 1933, while the same magazines 10 years later were publishing aggregate issues of 163,200,000. In 10 years, circulations practically doubled. Keep that in mind and try to imagine what that means from the standpoint of machinery needed.

Next, there is advertising revenue. Figures from the Publishers' Information Bureau show that in the 10-year period from 1935 to 1945, the volume of all advertising invested in magazines went from $120,000,000 to $308,000,000. The rate of growth here was two and one-half times in 10 years. Large amounts of advertising make fat issues. So it can be seen that the number of pages per copy is increasing, as well as the number of copies.

Now add to this the increase in four-color. An analysis of the May issues of 11 representative magazines for 1934 and 1944 shows that editorial four-color increased from 42 to 131 pages, a three-fold increase.

Much more complete figures are available for advertising four-color. This data shows the four-color linage of 72 magazines for the full years of 1939 and 1945. This is only a six-year period, but it illustrates the rate of advertising four-color growth better than any other figures available.

The 1939 linage of 2,340,000 grew in six years to 8,711,670—three and one-half times as much. Added up, this gives the answer to the question: "Why wet printing?" The number of four-color pages printed today must be six to 10 times as many as 10 years ago.

Quality of printing

Now a word about quality. The basic problem in four-color printing is this: an advertiser's original four-color art (paintings, transparencies, Carbros) must be separated into four parts—yellow, red, blue, and black—and brought back together again at great speeds, usually in a smaller size, using cheaper materials on which control is limited.

It is often quite a shock to the advertising agency and the client when they see the reproduction for the first time. The author has been called into many meetings where long-faced clients and account executives were huddling before the original and the reproduction. Sooner or later the inevitable question is asked: "Look at it. Do you think you have reproduced that art?"

Let us look at it. The photograph is the product of an extremely skilled technician, working under ideal conditions. Because he will not trust the electric current, which varies with every hour of the day, he has a voltage regulator that keeps his power uniform. The Kelvin temperature of his lights must be taken and recorded. He has unlimited light. He can pour so much light on opaque objects that any transparency will clearly appear. He can cross-light to deepen shadows or use direct head-on light and eliminate them.

The city cannot switch from one water reservoir to another without notifying him, as it affects his chemicals and he must make adjustments. His chemicals are tested regularly. The age of his printing papers is carefully recorded, for he must make exposure adjustments to correct for aging. His air is filtered, and temperature and humidity controlled. And he has a cold room for his work with gelatin substances.

He has the whitest of white papers, the most intensely pigmented papers of yellow and red and blue that science can provide. He uses small quantities of each material so they definitely can be the very best that is actually possible.

Photographer vs. printer

Here is a comparison of a case that actually took place.

Cost: The original art costs $2,000. The reproduction costs one-quarter of a cent per copy. The relationship is 800,000 to 1.

Materials: The photographer's control of materials has been described. The printer has limited control of ink and paper, both of which are supplied by outside sources; and, except in gravure, he has little control of plates.

Size: The original is 263 square inches, to 62 square inches for the reproduction, or better than 4 to 1.

Speed: The original took a minimum of 48 hours to produce; each reproduction was made on the press in 1/10 of a second. The relationship in time is 1,728,000 to 1.

The photographer's white paper is whiter than the publication's paper, his colors more intense than the printer's, so the photographer's range of color is greater than the printer's. This means that the colors in the reproduction will seem flatter than in the original. The best that can be done is to retain a relationship between tones.

When these facts are considered, it does not seem fair to expect an exact reproduction. In fact, it might as well be frankly stated: it is impossible to reproduce original art exactly in publication printing of the present day.

Commercial match

This brings up the subject of a commercial match of copy. No one to the author's knowledge has ever defined commercial match, but the term is used quite generally and understood. To the author, it means a match that will enable anyone to clearly recognize the principal objects in an illustration and to get the basic idea presented; or, to state it another way, it is a match that experts, familiar with the materials and the process, will agree is as good as can be expected.

No printer ever deliberately sets out to do a bad job. In fact, the objective of printers, publishers, and others in the industry is to constantly improve the commercial match and give the advertiser more for his money.

An advertiser spends his dollars where he can get the most value in exchange for them. If radio sells more merchandise for him than magazines do per dollar spent, then radio will get magazine dollars, and vice versa.

One magazine's real competition is not another magazine but another medium, since no magazine gets a chance to compete for the advertiser's dollars until the advertiser and the agency decide on the basic media plans. If magazines are included in the appropriation, then and only then can one magazine compete with another.

The constant problem in attracting business to our industry is to deliver more and more effective messages to more and more people at less and less cost.

The progress of magazines has closely paralleled the progress in printing press design. As the need for increased speed in production grew, faster presses were developed. The single-color press was superseded by the two-color press and that in turn by the four-color press.

Sheet-fed presses were followed by web-fed presses, so widely used today.

All these developments were rushed to completion to meet the need for greater speed in production. Here is an actual case, the information being furnished by McCall's Magazine:

Yesterday's presses

"Twenty-five years ago, McCall's Magazine was printing on two-color, sheet-fed, sheet delivery presses. These presses were operated with a crew of two men per press at a speed of approximately 1,500 sixteen-page impressions per hour.

"This means that the crew was producing 48,000 page colors per hour, which is obtained by multiplying the speed, 1,500, by 16, the number of pages, by 2, the number of colors. As the presses were operated with a two-man crew, this 48,000 per press meant 24,000 page colors per man per hour.

"Around 1925, McCall's transferred all its color work to McKee four-color presses, sheet-fed, sheet delivery. These presses produced 18 pages in four colors at a speed of 2,500 impressions per hour with a crew of three men. Applying the same method of calculation, one man now produced 60,000 page colors per hour, or two and one-half times what he did with the old method.

"This represented the first big step forward in mass publication printing, and was the direct result of the development of four-color inks that could be printed almost simultaneously, trap properly, and dry reasonably fast, so that the sheets could be folded and bound into magazines for immediate delivery to distributor or subscriber.

Modern presses

"After this McKee press came the heat-set five-color units on which are printed the bulk of McCall's Magazine. (This was about 1937.) These presses are roll-fed, folding delivery and print 40 pages in four colors at a speed of 8,000 per hour, a total of 1,280,000 page colors per hour, with a crew of six men.

"Again, applying the same method of calculation as for the old flat-beds, one man now produces 213,000 page colors per hour and in addition delivers a folded product ready for binding. This method, then, is an improvement of more than three times the old four-color operation and nine times the operation that was used 25 years ago."

Note that the output per man is nine times the rate 25 years ago. As there are three times as many pressmen, this means that the output per press is three times nine, or 27 times what it was 25 years ago. McCall's has five of these presses, which is equivalent in production to 5 times 27, or 135 presses of 25 years ago.

To visualize this new press, you must think of a space about as large as two freight cars; a 70-inch web of paper flowing into one end at 10 miles an hour; two three-inch-diameter gas pipes feeding two furnaces that produce 2000° temperature, through which the web travels after printing; and about 60 gallons of cold water per minute flowing through cooling rollers. Out of the folder end of this 350,000-pound monster, costing $1 per pound, come neat little folded signatures with four colors printed on both sides.

Press, ink improvements

This is a great achievement in science and engineering. It enables the publishing industry to offer four-color to advertisers for a fraction of the cost if produced on the presses of 25 years ago. It enables an advertiser through magazines to place his vivid, colorful messages into the hands of millions of readers all over the country at a small fraction of a cent each.

Today's magazines could not be produced on yesterday's presses. Without this press development, the publishing industry today would be plagued with high costs and cumbersome, inefficient operations.

Every factor in the industry has contributed. The press manufacturers produced the presses—always with enough speed to keep ahead of other developments. The ink companies evolved heat-set inks.

These are formulated by taking a solvent with a vapor pressure point around 180° to 200° and dissolving in it a resinous material, the two combining into a pasty vehicle into which the pigment is ground. The ink remains stable through the press, and after printing goes through a furnace or over a steam drum which with torrid air produces enough heat to instantly vaporize the solvent and make the ink bone dry.

Ink companies have made important contributions to the new science of rheology—the science of flow. By inventing the tackmeter they now have a means of measuring the tack of an ink at any press speed. They can tell in advance how any ink will break down, because of its thixotropic properties. They can now make inks that they know in advance will work at a fixed speed on the most modern press.

But they are not satisfied yet. New ink formulations are coming that will enable the printer to print with a thinner film, which can be achieved when we get smoother surfaces on paper and stronger colors in ink. Then the engraver's problem will be easier, for more intensities can be controlled or regulated.

Machine coated paper

The paper companies have made a major contribution in machine coated papers. This has been accomplished by adding a coating section to a regular paper-making machine so that the web of paper now flows from the Fourdrinier machine that makes it, through the coating machine that coats both sides before the web is thoroughly dry and then dries both the base and the coating. The paper is then put through calendar stacks and is ready for printing.

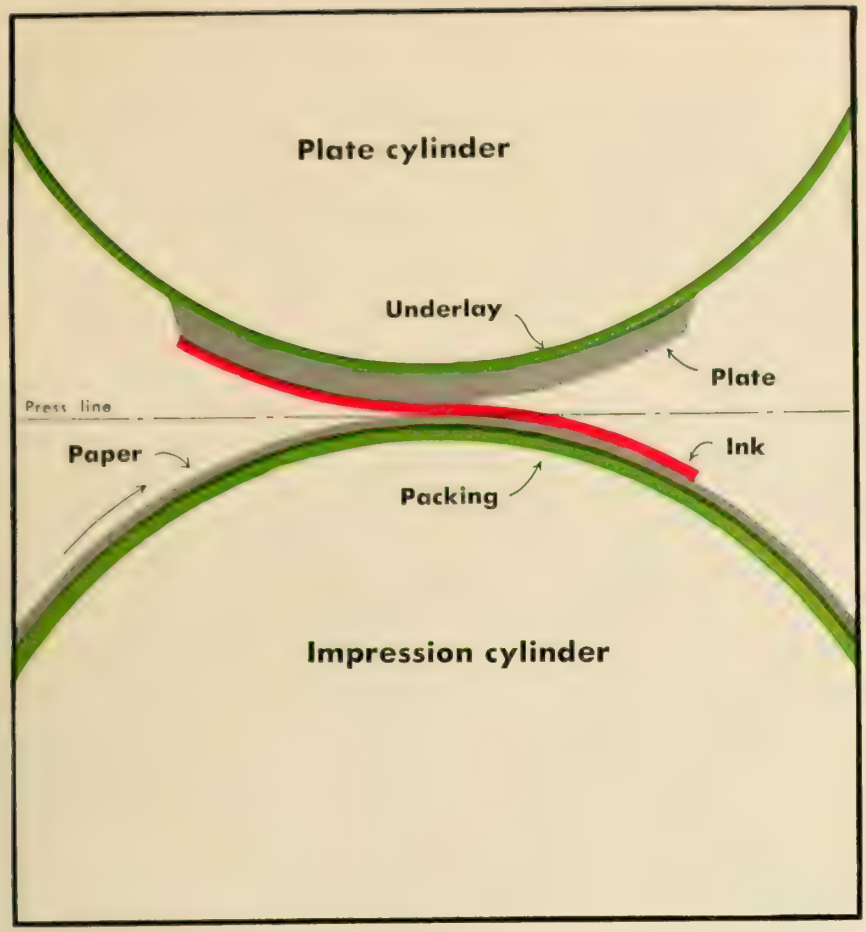
This achievement has made it possible to get the same printed results from cheap, light-weight paper that were formerly obtained only from expensive heavy enamelled stock. Coatings are as complicated as inks, and the paper companies are constantly carrying on research on this subject, trying to find stronger adhesives, materials, and methods that will give smoother surfaces and a product that will have a greater affinity for ink used in publicating printing.

Speed of paper making

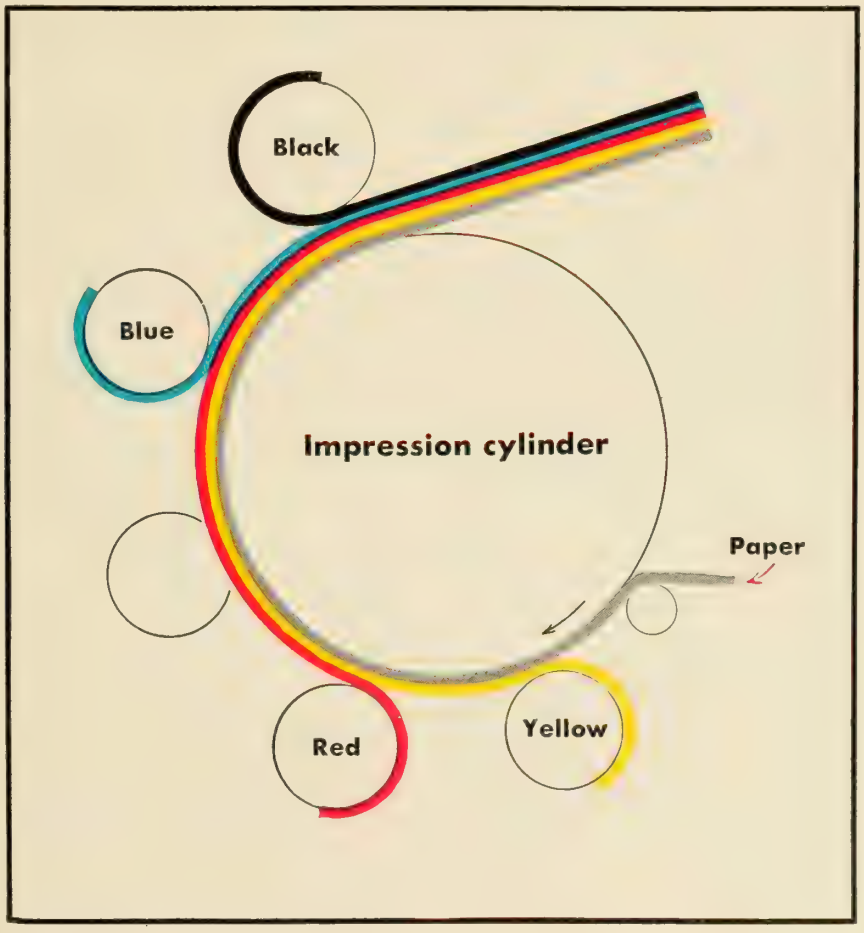
When we stop to realize that the speed of the paper machine today is about three times the speed of the paper-making machine after the first World War, we can see that here, too, is a vital contributing factor to the whole subject of high-speed printing.

Photographic processes have made like progress. Photographers have used their art so well to enhance the appearance of subject matter that publications have enough margin to work on to produce beautiful pictures in the eyes of the reader.

The increase in effectiveness of these four-color advertisements justifies the cooperation within the industry necessary to make them possible. All these improvements have helped the industry as well as its customers.



Dry printing: The illustration to the left illustrates the principle of dry printing. There are two cylinders used for the printing of each color. The plate cylinder (analagous to the bed in flat bed printing) contains the curved printing plates and is inked. The paper travels around the impression cylinder and when it comes into contact with the plate, the ink is transferred to the paper. This procedure is repeated for each succeeding color. Because each plate cylinder has its corresponding impression cylinder, unlimited makeready for each color is possible. Because each color is printed separately and only after the preceding color has dried, there is no more ink problem in this type of work than in single color printing.



Wet printing: The illustration to the right illustrates the principle of wet printing. One large impression cylinder is used to accommodate five plate cylinders. Four of the plate cylinders are used in process color printing. The fifth cylinder is used, as the job necessitates, to put the second color on two color pages or to add special effects to the process pages. The paper travels around the impression cylinder and comes into contact with the plate cylinders in rapid succession, each layer of ink being transferred to the paper while the preceding colors are still wet. Because each plate cylinder does not have its own impression cylinder, less press makeready is possible in this method than in standard dry printing procedure.



One piece copy

Full color lithographic reproductions can be made from either black-and-white original art or from full color art. To use black-and-white art for color reproduction most efficiently it is suggested that the copy be prepared in one of the following two manners:

1. Complete black-and-white layout-art work: This consists of a complete paste-up of all elements in black-and-white, such as type, headlines, drawings, and photographs, all in position on the layout ready for the camera. The flat colors or tints to be added should be indicated on a tissue overlay. This method of copy preparation is illustrated above. It has the advantages of all copy being in one piece and in position so that the lithographer can handle it with the minimum of effort and time and with the least possible chance of any element's being incorrectly positioned.

The more complete the layout art work, the better the end result may be visualized and disappointment avoided.

Separate drawings

Secondly, black-and-white layout-art work with drawings or photographs separate can be used. While the first method of preparing copy for the lithographer is preferred it is not always possible to incorporate all the art work on one master board. In such cases this alternate method is used. This consists of a paste-up of type, headlines, etc., in black-and-white, similar to the above, but with drawings and photographs to be stripped in as per instructions. It is most efficient to supply such separate pieces of art work in one focus if possible. A tissue overlay indicating flat colors or color tints to be added should accompany the layout when sent to the lithographer.

Color copy

When using color copy, such as color transparencies or prints or wash drawings in color, either of the above methods may be used. That is, copy and layout can be all one piece. No color overlay is needed since the color copy itself shows exactly how it is to be reproduced. Or, as in the alternate method just outlined, the color art can be supplied as separate from the rest of the copy and layout. In such a case specific instructions as to size and position for each separate piece should accompany the layout and the completed art work.

Advantages of one-piece copy

While most good lithographers can handle copy and layouts when supplied in less finished form than outlined above, supplying many loose pieces of art work and a rough layout will increase the charge for the job in most cases as well as increase the possibility of errors being made at some point along the way.

Copy preparation hints

To obtain the best possible color reproductions the following suggestions are made:

1. Be sure that all type impressions are jet black and sharp, pulled on white, coated paper.
2. Be sure that final trim marks are clearly indicated, exactly correct as to size, and accurately squared.
3. Be sure that position and crop marks for all illustrations are clearly indicated.
4. Be sure that the art work allows for proper folding. Make a dummy of your folder, note how the folds work, and make proper allowance for the adjustment in page sizes.
5. Separate illustrations for stripping-in can be any size, but it is more economical to furnish all or as many as possible of the drawings or photographs in the same focus, so they can be grouped for the same reduction or enlargement by the camera at one time.
6. It is preferable for you to furnish your type paste-up in actual size. This permits composition of the text areas in exactly the same size type that will appear on the final reproduction. It also saves you money on the type-setting.

Copy for lithographic reproduction

A good dummy is the foundation for a successful and efficient lithographed job; correct position and color of all units should be clearly indicated

A. Albert Freeman

There is no secret formula for the preparation of copy for reproduction by offset lithography. Good common sense and a knowledge of the fundamental principles and basic operations of the offset method are all that are necessary for good results.

The production man who has a thorough knowledge of copy requirements for letterpress reproduction will make good use of his experience in the offset field because many of the requirements are in general virtually the same.

Making the dummy

The foundation for all the planning on any sizable printed job is a good dummy. Wherever possible, this should be laid out before any of the finished art work is started. In many instances, it will be necessary to construct a dummy around existing art work, but in either case, it is well to remember that expense and hazards are avoided by making changes in the dummy, rather than during the progress of the job.

A good dummy will show the correct position and color of all type and illustration units in the job. It will be used as a guide for trim size and folding requirements. A sample of the paper to be used should accompany the dummy, together with reproduction proofs of the type, illustrations properly marked for size and keyed for stripping, and inked specimens of the colors to be matched.

The first step in the production of an offset job is the making of film negatives from the original copy. Subsequent production operations have a direct bearing on the manner in which the original copy is prepared, but the results obtained in the camera department are of prime importance. Keeping the camera in mind as the key to successful preparation of copy for offset reproduction, it is easy to understand that best results will be obtained if copy is furnished to the lithographer in a condition that bears the closest possible resemblance to what is wanted in the completed job.

The designer of printed material has considerable latitude in regard to the selection of suitable type faces. He can feel confident of good results with any type face from which satisfactory reproduction proofs can be made. If suitable reproduction proofs cannot be made from any particular type design, that type is not good for any method of reproduction.

Good photographic results have been obtained from reproduction proofs of type on high gloss coated, dull coated, super, and other paper stocks. The preference for a particular kind of paper will vary with individual experiences of camera operators in the different lithographic plants. Because of this variation, best results will be obtained by consulting with the lithographer selected for the job before specifying the grade of paper to use for reproduction proofs.

All corrections and adjustments of the type material should be made before ordering reproduction proofs. When trimming the proofs for paste-up, a little margin should be allowed for handling, to prevent smearing of the ink. This margin also will provide the necessary space for cleaning the excess rubber cement from the paste-up. For a fuller discussion of reproduction proofs, see the article that appears on pages 441 and 442.

Properly prepared copy has all the black-and-white line work accurately pasted in position. When separate copy is furnished for elements of the line work, with indications for enlargement, reduction, negative, etc., additional photographic operations are required of the lithographer that could very often be eliminated by using good photo-copy prints. The latter will result not only in greater economy by cutting down the amount of stripping with negatives, but also in a greater degree of accuracy.

It has been found that the largest percentage of errors occurs in the stripping operation, because of a lack of specific instructions and improper indications for size and position of the copy to be stripped in. The artist or designer who planned the job is better qualified to place the different elements in their exact position than is the stripper in the lithographic plant.

When it is not advisable to use photo-copy prints for the separate elements, the position must be indicated accurately on a flap or overlay, keyed by letter or number to the actual element to be stripped, and detailed accurate instructions must be furnished to prevent costly, time-consuming errors.

Line drawings, when done to size, should be pasted on the copy, together with the type, rules, or ornaments. When it is necessary to enlarge or reduce line drawings, good photo-copies very often will serve the purpose. If the offset camera is considered more desirable to make size adjustment of line drawings, the same precaution mentioned in the preceeding paragraph should be taken.

Line subjects consist of clearly defined black-and-white areas that can be reproduced without using a halftone screen. A line negative is simply a "reverse image" of the original, the black areas being quite transparent and the white paper being represented by virtual opacity, as in a photographic negative.

Line copy

Line copy includes proofs of type; printed matter, such as pages of books or pamphlets; typewritten text matter (see chart on Typing For Offset); proofs of line and halftone engravings; proofs of wood engravings, steel and copperplate engravings; ruled forms (preferably drawn in India drawing ink); pen-and-ink sketches; boldly executed charcoal, crayon, and pencil drawings; Ben Day drawings, or art work employing other shading media (see chart on Shading Media); blueprints, architects' tracings, sketches, maps, plans, graphs, diagrams, etc.

It is more difficult to handle copy consisting of photographs and illustrations with continuous variations of tones (continuous-tone). The characteristics of this kind of copy have been widely discussed but too often misunderstood.

Good contrasty black-and-white pho-

tographs are not the prime requirements for satisfactory reproduction purposes to the exclusion of everything else. It is more important to show good detail at both ends of the scale, since the camera operator can increase the contrast of his negative but can do nothing to restore the detail missing in the extreme highlights as well as deep shadows of too contrasty photographs.

All photographs should be mounted on board and covered with a tissue overlay, to prevent damage to the gelatin surface. Imperfections in photographs can easily be corrected by retouching, if the gelatin surface is intact, but nothing can be done if the photograph is cracked by rolling or marred by paper clips or impressions of hard pencil marks.

Halftone copy

Under the halftone copy classification are grouped those originals wherein the image is represented by continuous gradations, either in the form of a silver deposit (as in photographs) or in the form of pigments used in oil, water-color, pastel, and delicate pencil sketches.

Black-and-white halftone copy falls into three general categories: normal, light, and heavy. Normal halftone copy includes long-scale glossy and matté-surfaced photographs, wash drawings, good halftone proofs of moderately fine screens, and smooth crayon and charcoal sketches.

Light halftone copy includes high key photographs, old and faded photographs, pastel drawings, pencil sketches that are not too heavy, delicate etchings, and prints.

Heavy halftone copy includes low key portraits and glossy prints with deep shadows, sepia and reddish toned photographs, tinted photographs, heavy halftone proofs, reproductions from tintypes, rotogravure impressions, mezzotint or aquatint impressions, heavy bromoil prints, gum bichromate prints, heavy drypoint etchings, and heavy airbrush drawings.

The division of halftone copy in this manner is not merely academic. Each kind of copy requires a slightly different halftone photographic technique and lithographic treatment if the best reproduction results are to be obtained.

One of the distinguishing features of offset lithography is its ability to reproduce halftone illustrations of 250-line screen and finer on most kinds of paper, coated as well as uncoated. Contact screens are now available as fine as 175-line screen. Silhouettes, vignettes and highlight drop-outs can be handled as usual, with opaque white applied by brush or air brush on the original photograph or illustration, but the Kodak Fluorescent retouching white and the Kromolite Process now make it possible to obtain automatic highlight drop-outs in the offset method of reproduction.

Line color work (color spots, type, backgrounds, etc.) should be prepared in black ink on the finished drawing or paste-up, and an overlay of semi-transparent paper used to indicate the color areas. This method of preparing line copy for color reproduction allows the lithographer to make additional negatives for each color from a single paste-up, and by opaquing the unwanted copy on each negative, accurate color separation negatives are obtained in perfect register. The overlay can also be used to indicate Ben Day shading.

Color separations for illustrations that do not require close register can also be produced from a key outline drawing by making finished drawings on overlays for each color. The same principle can be applied by making non-photographic blueprints of the key outline on four sheets of drawing paper. Using separate sheets for the yellow, red, blue, and black plates, the colored areas are then inked in to correspond with the color areas of the finished illustration. This non-photographic blue outline method can be utilized on Craftint and other grades of paper to obtain color separation drawings with a gradation of tone values for line reproduction.

Panchromatic film has been used successfully for making separation negatives from multicolor line illustrations that are entirely too complicated to be used for the opaquing or non-photographic blueprint methods.

A two-color halftone or duotone reproduction requires two negatives, usually made from the same original copy. One is ordinarily a soft, full-tone negative, while the other is sharp and contrasty. The former is printed in a light color and produces the overall tone values, while the latter is reproduced in a darker color and accentuates the depths. The choice of color combinations for duotone work must be considered carefully The best duotone negatives, when reproduced in poor combinations of colors, will be ineffective.

Photographs and wash drawings that are satisfactory for one-color reproduction do not always meet the requirements for duotone reproduction. Full tone original copy is often better for the latter, while contrasty type of copy more often produces considerably better results in standard one-color reproduction.

Process color copy

Color copy used for process reproduction in three or more colors usually consists of water-color drawings, oil paintings, hand-colored photographs, transparencies or black-and-white color separation drawings or negatives, accompanied by a full color sketch or photograph, which is used as a color guide.

The first step in process color reproduction from hand-made drawings or paintings consists of making separate photographic negatives for each prime color in the finished copy. When suitable colors are selected by the artist, most of the color separation can be done photographically with filters.

But too often, copy is prepared with colors that never were intended for color reproduction. On a photographic plate, some yellows will indicate from 30 to 60 per cent white. Some blues will register the same percentage of black. The combination of these two colors would produce a dirty green that would have a reflection value of almost black in all the color separation negatives.

A considerable amount of hand color correction is necessary to remedy this difficulty. More accurate reproduction is obtainable when copy is prepared with colors that closely resemble the process colors of the inks that are being used on the offset press.

In the preparation of full color illustrations, the artist should be advised to be sparing in the use of black ink. He should achieve his basic densities by using yellows, reds, and blues, because black is the most difficult color to correct and take out of the yellow, red, and blue negatives.

Hand-colored photographs are usually the most difficult kind of copy to use for color reproduction. The transparent characteristics of the wash colors permit the black to show through to such an extent that frequently all the negatives look almost alike. Expensive hand work is often necessary to obtain satisfactory reproduction in color from this kind of copy.

Several color photography methods are in use today. For a full description of them consult the Cross-Reference Subject Index. For an example of how to best supply copy to the lithographer see the insert facing Page 275.

Lithographic Versatility



CREATIVE POINT OF PURCHASE

Sweeney VERSATILITY is the skill of creating Point of Purchase displays that SELL your product.

CREATIVE CLOTH LITHOGRAPHY

Sweeney VERSATILITY produced wash fast lithograph colors for textile printing—"something new"—ideal for resale or self-liquidating premiums.





CREATIVE PLASTIC LITHOGRAPHY

Sweeney VERSATILITY presents a powerful new media in the use of plastics. Let us analyze its revolutionary possibilities for you.

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PLANT: 69 Academy Street, Belleville, N. J.

Lithographic *Versatility*

VERSATILITY in creating display advertising material, whether it be window displays lithographed in full color, or posters, wrappers or merchandising cartons, help the manufacturer and the retailer capitalize on the American purchasing power. This requires not only the creative artist's inspiration, but the talents of skilled craftsmen and specialized equipment. Thirty-seven years of producing lithographed advertising material has given the name of Sweeney a reputation for highest quality and service in all forms of color lithography on paper, cloth or plastic.

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50 Church St., New York, N.Y.

TELEPHONE: Rector 2-4840

Using lithography effectively

A clear understanding of the technical and the cost aspects of the process aid the production man in determining when it should be used

H. C. Latimer

It is generally acknowledged that each printing process has its own field. The purpose of this article is to define lithography's field, and to group in concise form the basic reasons why lithography is selected as the process to be used in producing various types of commercial printing. This will help to show the newcomer in advertising and the nonprofessional printing buyer the applications and advantages of the process as well as its frequent economies.

In some cases, the choice of the paper to be used or the size of the printed piece may indicate lithography as the process to be used; in other cases, the cost of the job including engravings will be the determining factor, the buyer getting a price by lithography as well as a price by one of the other processes when he thinks it advisable to do so.

Short runs

From the standpoint of cost, the lithographic process may be at a relative disadvantage in the production of certain types of jobs, chiefly those involving individual short runs.

If these short-run jobs are made up entirely of straight type matter that can be printed directly from the type by letterpress or if the job is one where the higher costs of letterpress makeready and engravings are not too important as cost factors, the economies in lithographic makeready and higher lithographic press speeds may not be sufficient to offset the initial cost of making the lithographic press plate.

Long runs

However, as the length of the run increases—particularly when it is sufficiently long to warrant running the job in multiple units—or as letterpress makeready and engravings increase in importance as cost factors, lithography soon makes up this disadvantage and becomes more economical.

Lower costs are obtained for short-run jobs in lithography by "gang running" several such jobs in one press run. In this way, the plate and press costs are divided between the several jobs that make up the single press run.

Quality of work

The quality of work turned out by any of the printing processes and the price for which a job can be purchased are dependent upon many factors. All of the processes are capable of producing good, bad, and indifferent work, and lithography is no exception. With this process, as with the others, wide variation in quality is possible and considerable differences in price will be found.

Quality of management, sales policies, appropriateness of equipment, experience and skill of the working force, etc., as well as price, are all basic factors in the selection of the lithographer or printer with whom to entrust the production of a job. The reasons for using the lithographic process usually come under one or more of six basic groups.

Halftones on rough stock

The first is when the choice of a paper stock calls for fine halftones of 120-line screen or better on a rough surface stock such as fancy finish, wove, antique or laid, bond, uncoated cover, etc. This is possible because the ink is applied from the rubber-covered offset cylinder. It applies to such work as:

1. Folders, broadsides, booklets, etc., with fine halftones on an expensive rough surface or fancy finish stock for effect.

2. Process color work on uncoated stock. On long runs, the use of an inexpensive uncoated stock, such as sulphite bond or halftone news, in place of coated stock required for letterpress, can make a considerable saving in cost of paper. Offset coated stock is used particularly for work to be varnished or for sharper detail or greater brilliancy of colors.

3. Letterheads with illustrative treatment calling for fine halftones on bond stock; also the advertising, four-page sales, and dramatized letterheads, using halftones with sales copy.

4. The new lightweight opaque bonds printed both sides and carrying halftone illustrations. Much used for statement enclosures by department stores and specialty shops that want the "tone" of a bond paper.

5. Envelopes to match letterhead treatment, or to carry through the art treatment or theme of a booklet or catalog; also the "panoramic" allover decoration envelope.

6. For letter campaigns where halftone illustrations are desirable. Lithography reproduces the illustrations, the letter, and the letterhead in one run speeding up the production and reducing handling considerably.

7. Direct mail literature, particularly broadsides, with large dramatic halftones and colors on the various fancy finish papers—handmade finish, homespun, etc., as well as on wove finish.

8. Children's picture books and many primary grade textbooks illustrated with attractive process colors and halftones on the text pages of soft uncoated stock, lessening eye strain, and on which the lithographic process can put fine halftones.

9. Advertisers' recipe books with process illustration on an uncoated stock by lithography. Wet fingers do not cause pages to stick together.

10. Parts books and instruction manuals using halftone illustrations on bond paper for its strength.

11. The trend in stockholders' reports to illustrated booklet form on wove or other rough surface stock. The same trend holds true in town and city yearly financial reports. Halftone illustration on such stock is very well handled by lithography.

12. Lithography permits fine halftone and process illustration on uncoated cover stock for magazines, catalogs, house organs, stockholders' reports, etc.

The covers of Fortune and Coronet magazines are examples of this work.

13. Liquor and other expensive bottle labels on uncoated stock with halftones.

There are, of course, many other applications of lithography such as magazine inserts, greeting cards, menus, etc. Lithography's ability to put fine halftones, frequently 175 or 250 screen, on the various uncoated paper stocks, and not cost, is the determining factor for the use of the process in the above types or categories of reproduction work.

Platemaking economies

With illustrations and color now being used extensively in many types of printing, the buyer today is concerned with the cost of printing plates—halftone and line engravings, electros for multiple images in longer runs, wax plates for fine ruled form work, reverse plates for many types of multicolor work, and process color plates—or their equivalent in printing processes other than letterpress. With the exception of electros, these costs are generally included in the printer's quotation when lithography or gravure are used.

Because of economies peculiar to the process and of ways of preparing copy for economical reproduction, lithography frequently offers the printing buyer an opportunity to eliminate, or greatly reduce, the cost for line illustrations, and to lower the cost of halftones—particularly for the large sizes, for silhouette, drop-out, or vignette halftones, and for combination line and halftone work.

Comparative bids

For this reason, comparative bids between processes are frequently obtained when there is a question as to which process would be most economical.

With lithography, there is no charge for the equivalent of line engravings if the illustration is in the same scale with the type proof and is placed in position. This means that a page including a pen-and-ink sketch or a Rossboard illustration with reversed signature (photocopy negative) pasted up with reproduction proof of type matter, all in scale, costs no more than reproducing straight type matter in equivalent size.

If the lithographer has to reduce the size of line illustration to fit space, there is a cost for a line negative, but this is less than the cost of a line engraving of the same size. For halftone illustrations, the extra charge for halftone negatives is usually less than for the equivalent halftone engravings.

Some textbooks on printing production state that lithography is particularly suitable for long runs of color work. This is true, but in short runs involving large initial plate cost, particularly process plates, lithography is frequently the most economical process because of the usual lower cost for lithographic plates and less makeready time involved—an important factor in short runs. There are exceptions to this, of course, for faithful reproduction of color work varies greatly in cost.

Where little or no typographic plate cost is involved, lithography is at a disadvantage economically until the length of run increases to the point where additional printing images—additional "steps" on a lithographic press plate, compared to electros in letterpress—appreciably reduce press running time.

Stepping-up

Since the cost of a "step" on a lithographic plate is small compared to that of an electro, and speeds of lithographic presses, which all are rotary, are greater than those of typographic flatbed presses, lithography is usually at an advantage on a long run. Sheet-fed rotary type presses of the three major processes are all comparable in speed.

If high initial typographic plate costs are involved, lithography's advantage becomes still greater in long runs. The local lithographer will give the cost of additional "steps"—a cost that varies little as to the size involved—and the price scale for electros will show their cost, which does vary according to size.

Ruled forms too intricate for making with Ludlow slugs or with type combined with rules can be prepared for the camera by making a layout, usually twice the size, with type matter pasted in position and ruled lines put in with a pen. Same size copy can be used with rulings indicated if the lines are scribed on the back of the negative. With lithography, the finest of lines can be held and plate cost is economical.

Conversions

Any form already well printed can be duplicated satisfactorily by lithography merely by photographing a good specimen. This is an often used form of reprint. It is generally conceded that fine ruled form work can be produced by letterpress only by making a wax plate, quite expensively. For long runs, lithography has the advantage of its economical "steps," compared to the cost of additional electros for letterpress. Lithography usually eliminates the necessity for pen ruling, thus saving an additional operation.

An advertising campaign involving the same process color illustration in posters, window displays, car cards, and direct mail gives lithography a cost advantage because this process does not have full color correction expense for each part, as in photo-engraving, where color correction is done on the metal plates.

One set of color-corrected negatives is used for all illustrations repeated, regardless of change in size, and the color correction costs for each different size are held to a minimum. (See Cross-Reference Index on Litho Conversions.)

Large size work

Because of the limitations of size with photo-engraving equipment and the cost of large engravings, most large-size work is lithographed. The exceptions are mainly for short runs of flat color work by silk screen, and for posters consisting only of type. Poster and display lithographers are equipped with large cameras for process color work, and with projectors for handling halftones in still larger size work.

The standard size sheet in poster work carries a printed image 42x58½ inches which can be a coarse screen halftone, a crayon tint, or a solid. Offset presses go up to 52x74 inches in size.

Displays

Window displays and other classes of work on heavy cardboard are made by pasting the lithographed sheets onto the cardboard, which is then scored, diecut, etc. Only car cards and some small display pieces are lithographed directly on heavy stock. Eight-ply board (30-point) is the heaviest feasible for medium size offset presses. (See Cross-Reference Index on Posters.)

Lithography has the advantage of speed. Under commercial conditions, less time is required to make plates, to reproduce art work in various sizes, and to make multiple images. Since the lithographer makes his own halftone and line illustrations, including reprints, he can often turn out such jobs faster than if he were required to wait for an engraver or an electrotyper to deliver the necessary printing plates.



REPRODUCED BY COURTESY OF PAPER NOVELTY MANUFACTURING COMPANY, BROOKLYN 15, N. Y.

Lithographed in Similetone Process by

ZEESE-WILKINSON-DILLON CO., Inc.

FORMERLY ZEESE-WILKINSON CO., Inc.

METROPOLITAN BUILDING
LONG ISLAND CITY 1, NEW YORK



REPRODUCED BY COURTESY OF ARS SACRA
HERBERT DUBLER, INC
NEW YORK 10, N. Y.

Fairy Tales

Lithographed in Similetone Process by

ZEESE-WILKINSON-DILLON CO., Inc.

FORMERLY ZEESE-WILKINSON CO., Inc

METROPOLITAN BUILDING
LONG ISLAND CITY 1, NEW YORK

The slight makeready necessary on lithographic presses may save as much as a day to two on a large form of many small halftones or on books with illustrations. Offset press speeds are also much higher than those of letterpress flat-bed presses. With much color work, the large size two-, three-, and four-color offset presses are an important factor in speed of production by this process.

Reprints

The countless forms of reprints are almost endless, and run all the way from 1,000 copies of a testimonial letter to a 100,000-copy reprint edition of a book. When done lithographically, there is no necessity for resetting the type and usually no cost for line engravings, the only requirement being that the printing is photographable.

The subject can be enlarged or reduced. Additions or deletions can readily be made in subject matter before reprinting. Proofs of new type matter can be pasted in position where type matter is not still standing, or where prices require changing when sending out revised pages of a price book or of a sales catalog.

Frequently a folder promoting the application of a company's equipment to a particular industry is made up by reprinting several pages from a general equipment catalog, together with additional informative data on the specific application. Only the new type matter need be set. Halftones can be reproduced in reprints, although it is advisable to furnish photographs if available to retain original quality of the illustrations; or, the halftones can be rescreened.

Typewritten composition

In all the three major printing processes, most of the composition, both heads and text, is first set in type. Today, however, considerable utility printing—part books, tabular work, instruction manuals, industrial catalogs, and price lists—is not set in type. Instead, typed composition is done on a regular or special typewriter.

Such copy is pasted in position with the line illustrations, which frequently are isometric drawings, the rules drawn with a ruling pen and perhaps "screened" Velox prints of photos pasted in, or position and size of halftones indicated on the copy. This is then photographed and produced by offset lithography with no cost for type composition or engravings, except for such halftone negatives as may be used.

Speedy production

Not only is there a saving in composition cost, but speed is frequently the most important factor, with photographic accuracy eliminating proofreading and corrections. Proofs of type-set heads or special paper letters can be pasted in position on the layout. The beginner in an industrial advertising department is apt to run into much of this kind of work. Cost, and not quality, is the determining factor in this sort of production. (See Cross-Reference Index on Velox Prints.)

Photolettering

Hand lettering and the various forms of camera composition—photocopies of assembled lettering—do not necessitate the expense of an engraving when used in lithography. The current development of photographic text typesetting probably will reduce the cost of text composition. Hand lettering machines already assemble headings on a strip of film. (See Cross-Reference Index on Photocomposition.)

Photographic negatives of magazine pages, or transparent form proofs, are being flown to distant areas and reproduced lithographically, thus saving the resetting of type or the time and cost that would be involved in making electros.

Halftone detail

Fineness of detail in a halftone has a direct relation to the fineness of the screen that is being used. For instance, a 65-line halftone such as is used in newspapers will not give the detail found in 133-line magazine ads. During World War II, the 200- and 300-line "contact" halftone screen was developed for producing lithographed maps with exceptional detail for identifying objects photographed from airplanes miles high.

Many process color lithographers are now utilizing these contact screens, as well as the regular 250-line glass halftone screen in use for many years. Fine halftone screens also eliminate the "star" pattern seen in much process color work.

The most general reasons for using the lithographic process will fall within one or more of the fundamental classifications just given. There are, however, other particular reasons for its use:

1. Combination runs: With lithography, a printing buyer is frequently able to take advantage of the economy of a gang run in which several different jobs are run at the same time on same sheet of stock. Even process color work is handled this way. Lithography is able to do this because the makeready of a large number of halftones in a large form is largely eliminated. The cost of the lithographic press operation is naturally divided between the job runs.

Reproducing solids

2. Solids: Lithography is frequently used for large solids, such as a reproduction of a blueprint or poster with solid reverse background, because many flat-bed presses do not give uniform ink coverage to the entire printing area, as a result of which one end of a large reverse plate frequently receives less ink than the rest of the plate.

Step-and-repeat

3. Small size multiples: Particularly in process work, lithography has an advantage here because of the step-and-repeat camera and plate-making equipment, which give register to 1/1000 of an inch mechanically. This is reflected in the work on Christmas seals, poster stamps, labels, etc. Less makeready also is a factor that should be considered.

Soft tones

4. Softness: Because lithography can put fine halftones on soft uncoated paper stock, certain types of printed literature take advantage of this in getting delicacy and softness of treatment. Literature about babies—their feeding, care, and clothing—is an example; cosmetic promotion is another. However, textbooks stressing this quality of softness as the chief reason for using lithography are out of date. Lithography has had coated-two-sides paper and gloss inks for a decade, and can give hardness and sparkle when called for.

Unusual materials

5. Materials other than paper: Chiefly because the ink is applied by a rubber blanket (offset cylinder), lithographing can be done on metal, cloth, celluloid, etc., on a commercial basis. The various forms of decalcomania are produced by lithography; these are used to put designs and printing on many surfaces.

Lithography

Fine detail and richness of tone now possible is the result of improved techniques, equipment, materials, and technical control

H. C. Latimer

Lithography is the printing process in which the printing image and the nonprinting areas of the printing plate are both on the same plane, or level, as compared to relief (letterpress) or intaglio (gravure).

The term lithography includes offset lithography, offset printing, photo-offset, photolithography, planography, etc.; in each, the basic method is the same. It is a chemical process dependent on the principle that grease and water do not mix. The basic principle was discovered by Alois Senefelder in 1798 after thousands of experiments.

Historical background

Senefelder in his efforts to avoid the laborious lettering in reverse on the original polished limestone, which for economy he used in place of copper plates in engraving, worked out a method of writing in the regular way on paper, then transferring this writing to the stone.

During these experiments, he softened paper with a previously prepared gum arabic surface by dipping it in water before laying it face down on the stone for transferring by pressure between two rollers.

Senefelder noticed that if a few drops of oil were in the water, the oil would distribute itself evenly over those portions of the paper bearing the inked writing and drawings, but would not adhere to uninked portions of the paper.

This led him to further experiments on the cleanly polished limestone surface. He inscribed a stone with a piece of soap, poured thin gum arabic solution over it, and rubbed the whole surface with a sponge containing greasy oil color (ink). When rolled up with a leather-covered inking roller, all the places marked with the fat (soap) took the ink, and the remainder of the stone surface did not, leaving a wet, mucous-like film on such areas. Senefelder found that he could make as many impressions as he desired by repeating the gumming and inking operations.

Here was a printing process, depending solely upon chemical action, that was totally, fundamentally different from all other processes. Thus was discovered true lithography, which is basically unchanged to this day.

Photomechanical methods, including the camera, photocomposing machines, etc., now have largely superseded hand transferring of text matter (proofs of type on transfer paper), hand crayon work, and Ben Day to the stone or its successor, the thin sheet of zinc or aluminum.

Process color plates in 250-line halftone screen, and even finer, now are made photomechanically to 1/1000 of an inch register. To put dozens of duplicate images on a large size litho press plate in such fine register is a simple mechanical process with a step-and-repeat photocomposing machine. (See Cross-Reference Index on Step-and-Repeat.)

The lithographer, like the photo-engraver, takes copy ready for the camera and makes a negative; for technical reasons, however, the lithographer produces a more "contrasty" negative. If halftone illustrations are to be used, the halftone negatives are made separately and stripped into position on the base negative of the type and other line matter. The size, position, and shape of the halftones are indicated on the paste-up of reproduction proofs of the type and line work.

Types of plates

There are two types of lithographic press plates, either of which can be made on zinc or aluminum. The most widely used — the albumin plate — is made with camera negatives through which the chemical action of light from arc lamps acts on the sensitized plate coating solution. The printing image thus is "burned in," and the coating on the nonprinting areas under the black of the negative is washed off.

The other type of press plate is the deep etch, which is used for long runs, better quality work, and almost always for process color jobs. With this plate, a film positive is used to get a protective mat over nonprinting areas when light is applied. The image in this case remains water soluble and is washed off, leaving the bare metal, which is etched very slightly. After a base is applied and the image developed, the protective mat over the nonprinting areas is removed.

War developments and later research give promise of longer-life litho press plates through the development of various bimetallic plates that will yield perhaps a million or more impressions.

Color correcting

In process color correcting, the lithographer works from the painting, carbro, transparency, etc., in the usual way, by first making color separation negatives. However, he does all color correcting on the negatives and positives, and none on the printing plate. This method is advantageous where the same color work is repeated in different sizes, and in making multiple images.

The lithographic artist, with the original color subject before him, works on the continuous-tone color separation negatives to decrease or increase the film density according to his judgment or the reading of a densitometer. A "dot-etcher" works on the screened positives for the final color correction, and from these positives the deep etch press plates are made.

Lithography's ability to reproduce detail and depth of tone in color work is chiefly the result of the dot-etching technique and the deep-etch type of press plate. Halftone screens of 250 lines and even finer can be used on uncoated papers to show texture or other detail. The amount of hand color correcting in lithography is being reduced through tone measuring instruments and such developments as the Eastman contact halftone screen evolved during the war for reproduction photographic maps. (See Cross-Reference Index on Contact Screens.)

Outline halftones, silhouetting, highlighting, soft edge vignetting, and highlight drop-outs are made with the cam-



This color subject originally reproduced at U. S. P. & L. in a recipe booklet for Derby Foods, Inc.

Color pays off in the sales column of almost any food product. That's why successful food manufacturers and merchandisers make liberal use of full color in their advertising and packaging materials. Let "U-S" show you how to put color to work most effectively in your sales promotional efforts. Write or phone for a "U-S" representative today.

THE UNITED STATES PRINTING & LITHOGRAPH COMPANY
EXECUTIVE OFFICES: 714 BEECH STREET, CINCINNATI 12, OHIO ★ SALES OFFICES IN PRINCIPAL CITIES
5 GREAT "U-S" PLANTS PRODUCING HIGHEST QUALITY ADVERTISING AND PACKAGING MATERIALS

era in lithography, but various other types of halftones are made by opaquing or the use of an airbrush on the negatives or positives. The superimposing of shading screens or of a line of type or lettering in either white or black across a halftone also is done at this stage. These kinds of halftones are found more frequently in lithography because the time and cost involved usually are not prohibitive, as in other processes.

Long run multiples

When length of run makes it advisable to run a job four up, 16 up, etc., the duplicate images usually are put on the press plate with a step-and-repeat machine. Each image is an original and requires only about three minutes to make. This obviously is reflected in both the cost and time saved. The plates also can be kept for re-runs. Since all images or pages for the form are on one sheet of metal, there is no breaking up of the form and its subsequent remaking for a re-run.

In the case of very small images such as stamps, seals, or labels, the lithographic process makes use of a step-and-repeat camera to make a negative unit of multiples. This might be 100 stamps on the negative, produced from one or more stamps by the camera. This unit of 100 would then be used in the step-and-repeat photocomposing machine to put the other units of 100 each on the litho press plate, up to plate's capacity.

Projection for large size

Lithography is widely used for large-size work such as posters and displays. One-piece halftones formerly were limited in size by available camera equipment, usually not over 48 x 48 inches. Although crayon tints and lettering are still made by hand directly on the plate in this field, in recent years projectors have been developed so that 24-sheet posters now can be produced entirely in halftone.

The 42 x 58½-inch image on a standard billboard sheet is now frequently done in process color. A 4 x 7-inch 250-line screened negative can be projected to give about a 40-line screen on the billboard sheet. Projection is advisable only for work to be viewed at some distance, such as billboards and truck posters, where color strength rather than fine detail is called for.

Because it is inexpensive to reproduce the same process color work in different sizes, projection is also used for displays and smaller posters where the budget demands economy. Besides using color corrected litho separation positives or negatives for enlargement or reduction in size, letterpress color plates can be "converted" by the lithographer for projection.

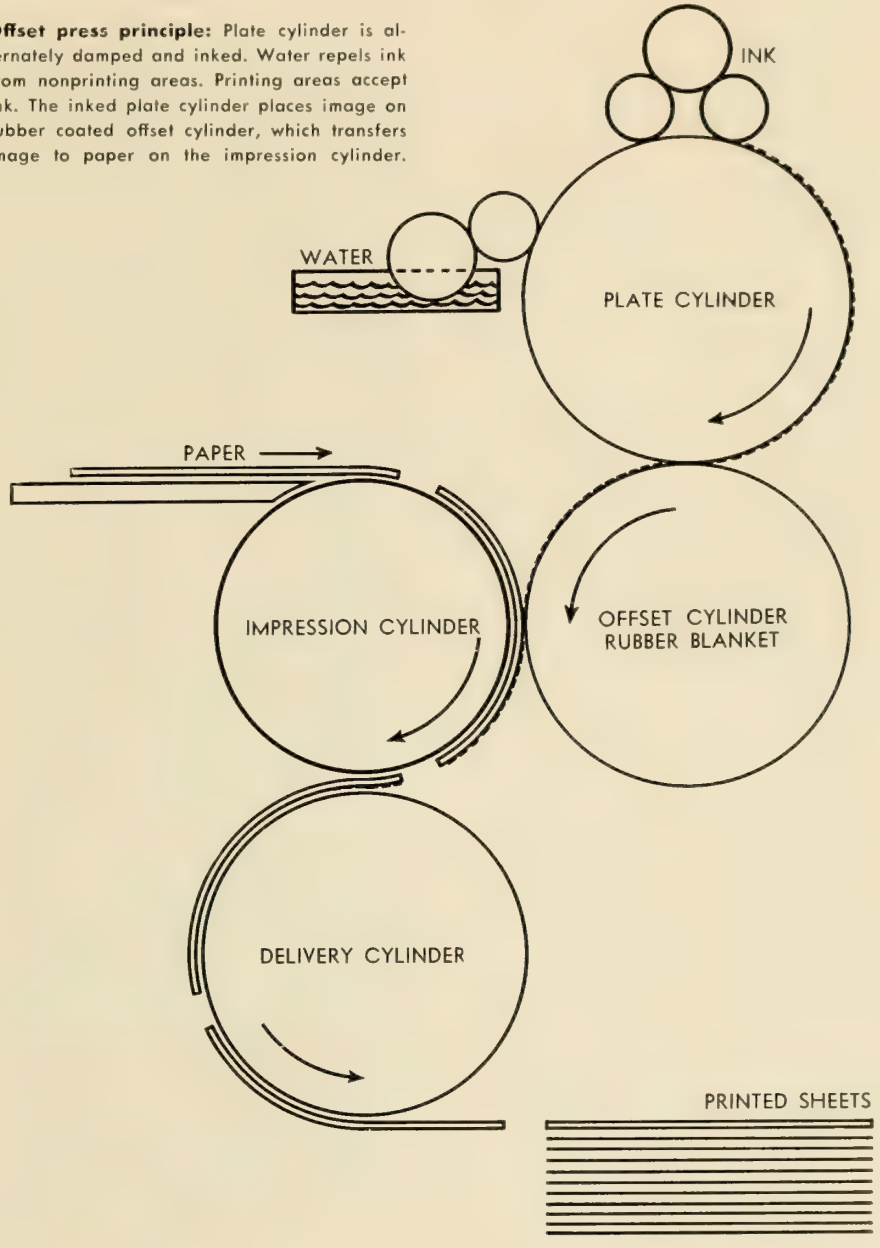
"Transparent" proofs in black of each color plate give him the equivalent of screened positives, color corrected and in register. Obviously "conversions" can be used for same size work, or just parts of the color work can be used with a new layout. (See Cross-Reference Subject Index on Lithographic Conversions.)

Offset press speed

Offset presses run in size from 17 x 22 inches to 52 x 76 inches, and can handle sheet size from 8 x 10 inches up to 52 x 76 inches. These presses are rotary in principle and have rated speeds of 5,000 to 7,000 impressions an hour. Actual running speed is less, of course, depending upon such factors as paper, ink, and register.

Because of the rubber-covered offset cylinder that picks up the ink from the press plate and transfers it to the paper, fine halftone work can be put on almost any type of paper, even fancy finishes

Offset press principle: Plate cylinder is alternately damped and inked. Water repels ink from nonprinting areas. Printing areas accept ink. The inked plate cylinder places image on rubber coated offset cylinder, which transfers image to paper on the impression cylinder.



and rag content bonds, or on antique cover stock. The offset cylinder also eliminates much of the press makeready involving pressures.

As with other printing processes, lithography has the two-, three-, and four-color sheet-fed presses, and roll-fed or web offset presses are also used. Most of these are reciprocating, multicolor presses that print both sides of the sheet in one or more colors. Many of these have speeds of 12,000 impressions an hour and are used for specialties and publication work.

Attachments are used for such operations as numbering, slitting, perforating, imprinting, and folding. Direct rotary lithographic presses (with no offset cylinder) are used for special purposes, particularly for putting heavy backgrounds on outdoor posters, and for the lithographing of decalcomanias.

Offset paper

Paper mills now produce a wide range of offset papers, both coated and uncoated. The distinctive feature of the uncoated offset paper is that it is surface sized to eliminate linting and to make it more suitable for the process. Letterpress stock ordered "sized for offset" is sometimes used.

The distinctive features of coated offset paper are that it must not "pick" (coating come off on the blanket) and that it must be waterproofed for a number of technical reasons. Any weight stock from onion skin to car card can be run on an offset press. For displays, the lithographed sheets are pasted on cardboard.

In lithography, the usual practice is for the customer to specify the kind of paper he wants, but the lithographer selects the mill brand. This is because the process is chemical rather than mechanical and there is a paper-ink-press factor that varies with operating conditions and shops. Although lithography is sometimes purposely used to get a soft effect —achieved through the kind of paper used—brilliant sparkle can also be obtained easily through the use of a hard finish coated stock and gloss offset inks.

Art techniques used

Layout artists accustomed to working with the lithographic process think in terms of large color areas, smooth solids, and large dramatic halftones on any kind of paper. Artists are not restricted to line work on many kinds of paper. They use a free, layout style because photolettered or hand lettered titles and line illustrations are economical.

They are accustomed to using considerable outline and drop-out halftones, and combination line and halftone work. They use delicate airbrush shading because of the way the process can reproduce shading evenly to a pure white.

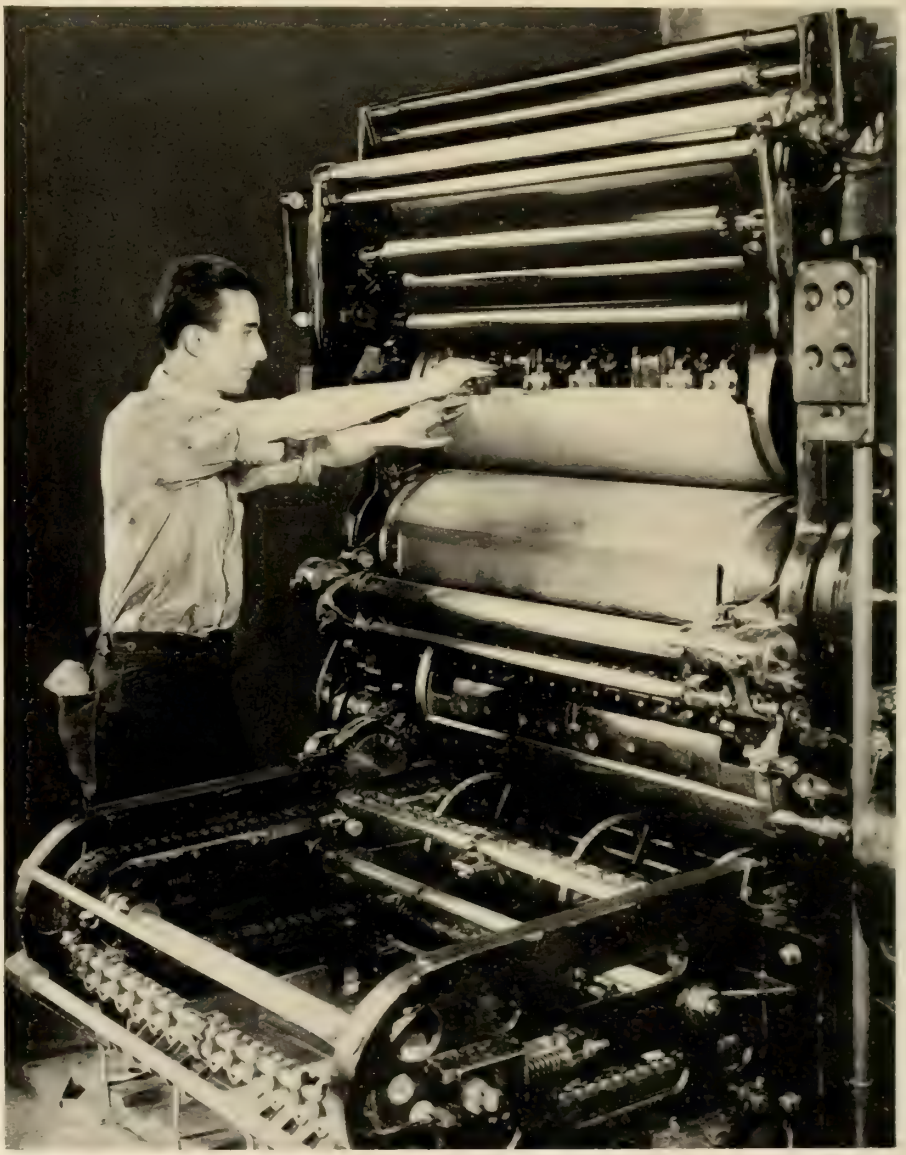
Since the only contact with lithography for many new advertising men is its use for inexpensive reproduction work—frequently referred to as planography or photo-offset—an explanation of the speed and economy, and sometimes poor quality, of this work is in order.

When 100 or 500 reprints of an ad or of a page of data are received in two or so days for a few dollars, they probably were produced as a part of a gang run or done on a small office duplicating machine using the lithographic principle.

Fine original vital

Paper negatives may have been used instead of film negatives; photographs of unequal density or quality may have been shot as a group for the halftone negatives. Naturally, some pictures will be reproduced quite badly. With this type of work, poor copy is frequently encountered.

The reproduction can be no better than the original. But the finest quality results can be obtained, as with other processes, if a good lithographer gets good copy and time to do the job.



Press detail: Clamping zinc plate to plate cylinder. Offset and impression cylinders can also be seen. The inking and water rollers are both mounted above the plate and impression cylinders.

Means for

REPRODUCTION ACCELERATION

is provided in the

NEW FLOATING PRECISION
DUAL DARKROOM PROCESS CAMERA

•

NEW PORTABLE ROLL FILM CARRIERS

•

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•

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ELECTRONOGRAPHIC MULTICOLOR PRESSES

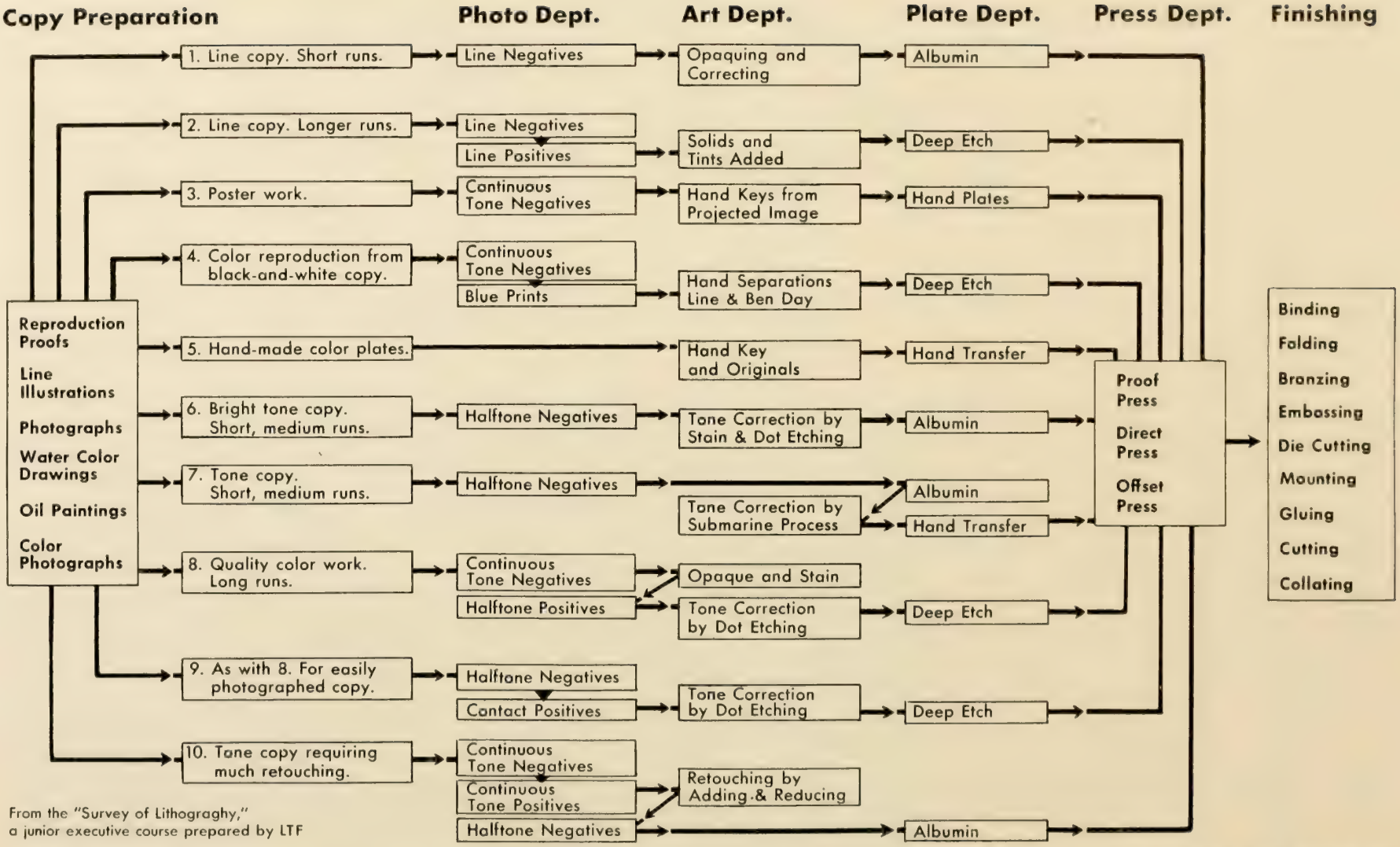
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A few of the contributions to the New Era ahead in Newspaper and Magazine Production

Huebner

HUEBNER LABORATORIES

305 EAST 46th STREET, NEW YORK 17, N. Y.



From the "Survey of Lithograghy,"
a junior executive course prepared by LTF

Rarely does one plant use all of the above methods. Depending on its equipment, a lithographic plant will use many of these. The initial necessity in any reproduction process is "copy," or something to be reproduced. On the left of the chart will be found various classifications of copy. The methods used will be determined by conditions. A key to the numbers used follows:

Number 1: Shows the steps in reproducing line copy such as pen drawings, type, and plain lettering. Short run, inexpensive.

Number 2: Employed when the runs are longer or when some hand work is more easily done on the positive than on the copy.

Number 3: Used in much poster work. Continuous tone negative is used as a key, or is projected for large keys, and then the plates are made by hand in full tone, following the key.

Number 4: A popular method for making color reproductions from black and white drawings or photos. A non-printing "keyed" blue print is made for each color from a negative. The color separation positives are then made by hand on these blue prints and deep-etch plates made from these .

Number 5: Was and still is used for color hand work where use of a camera is impractical. A hand key on gelatin is made direct from the copy, laid on stone or metal, and proofs pulled for printing chalk keys on color plates. For small subjects.

Number 6: Often used on bright and easily photographed subjects where the run is not excessive. It is the cheapest of the photographic methods. Separation halftone negatives are made direct from copy, corrected, and shot to albumin plates.

Number 7: Procedure is one variation of the Submarine Process. It was popular before modern methods of dot reduction were fully developed. Here dot reduction and some crayon additions are made on a soft albumin plate that will not stand up in press, so images are hand transferred to press plate.

Number 8: Now one of the most popular methods of reproducing quality color work. Continuous-tone color separations are made first, then halftone positives, finally deep-etch plates.

Number 9: An alternate to No 8. In some cases it will reduce camera work. For bright, easily photographed copy only.

Number 10: Procedure is the old negative positive negative method but is still used where copy is poor and much retouching must be done. The artist practically makes the job.

COLUMBIA LITHOGRAPHIC COMPANY, INC.
225 VARICK STREET, NEW YORK 14, NEW YORK Telephone WAtkins 4-1560

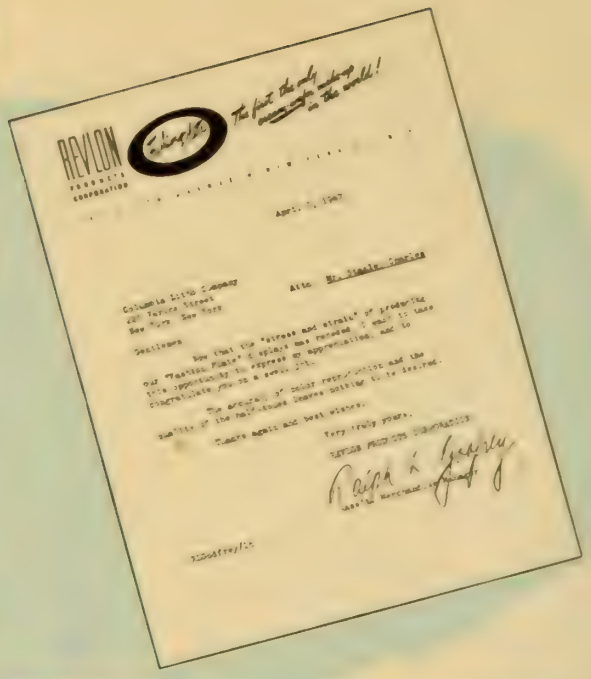
AN ANNOUNCEMENT OF IMPORTANCE

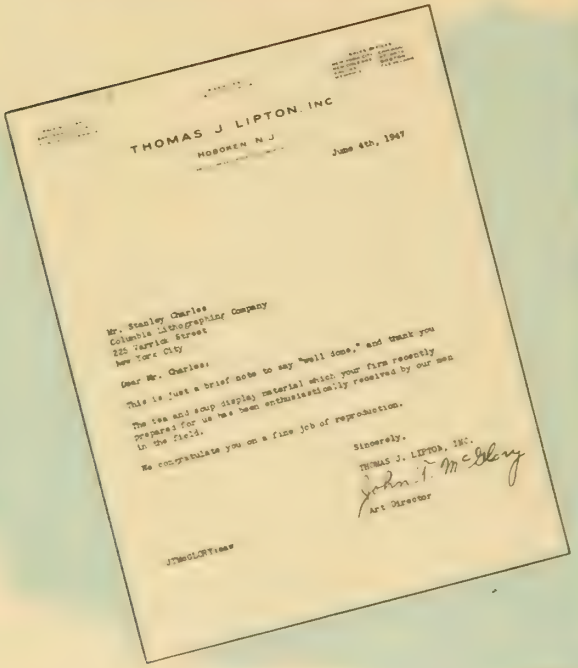
TO THE ADVERTISING FRATERNITY

The Columbia Lithographic Company has grown to maturity. During recent years we have expanded with a speed that can be matched by few others.

The war years accelerated the striking development that was so evident during the thirties and the post-war years will see this trend continued . . . Only a generation ago, most jobs were handled by good mechanics. Now, design and reproduction of copy require a high level of technical knowledge. In this segment of the industry, Columbia is not only concerned with what happens to copy inside the organization, but what happens to it when it reaches the buyer of the merchandise you advertise . . . The men who work in the shop and the men who contact you have much in common . . . each is familiar with the apparatus and supplies . . . each knows the tools and techniques . . . each talks the same trade language . . . and, for these reasons, we look forward to a future of service to the advertising fraternity and to the privilege of growing with it.









These advertisers recognize Columbia as the complete lithographic organization. We have their preference because our reproductions are uniformly high in quality, worthy of every message they carry, and the merchandise they help to sell.

COLUMBIA LITHOGRAPHIC CO., INC. • 225 VARICK STREET, NEW YORK CITY

Poster production

Many steps involved from rough sketch to actual showing of car cards, 24-sheet, one-, two-, or three-sheet posters, but each has its special know-how

Merle D. Penney

Messages on posters reach more people, more quickly, than on any other medium. For that reason, poster advertising has played one of the major roles in the advancement of American economy by reaching mass markets and stimulating mass purchases of the products of mass production, thus helping to raise the American living standard to a level far above that enjoyed by any other nation in the world, from any standpoint.

Historical background

The cave man, squatting outside his hole-in-the-earth dwelling and laboriously chiselling out his simple conceptions of life with outlined animals and characters, represented one of man's earliest attempts at outdoor expression. His creative ability and craftsmanship were in keeping with the I.Q. of those times.

All through history there are found, with increasing frequency and improved methods and technique, other examples of how to get a message across to people out of doors. Assyrians, Babylonians, and Egyptians carved hieroglyphs and characters on walls and on tablets as announcements and proclamations.

The Rosetta Stone (key to Egyptian literature) carried notice to the public regarding taxes. Trajan's column in Rome, which records the conquest of Parthia, is another example; and it is said that the finest types of poster lettering of today were inspired by the lettering on that column.

Shopkeepers in the market places of Rome were alert to the potential selling power of outdoor advertising. They carved their stories of products on walls and stones for all the public to see.

Printed signs

In the Middle Ages, outdoor messages and symbols of identification made their appearance on signs. As few persons knew how to read, such signs carried principally pictorial or symbolic messages. Following the Renaissance, the printed sign, the forerunner of printed posters, became quite common. Ultimately, posters decorated by woodcuts appeared.

Then, with the development of lithography, outdoor advertising really began to come into its own. Early American posters carried mostly gaudy and sensational pictorials and word messages promoting circuses, medicine men, state fairs, auction notices, and similar enterprises. Industry eventually began to vision the potentialities of outdoor advertising as an important medium of sales and advertising expression.

From then on, more and more skill went into all phases of outdoor advertising until today, outdoor advertising is a powerful medium through which millions of Americans can be reached quickly and consistently and with a high degree of effectiveness.

Posters have a number of jobs they must do: advertising, selling, and human relations. The manner in which they most effectively can perform those functions necessitates the employment of specialized techniques in every phase of their production, from original layout, through completed art work, production, and distribution.

Building the sketch

Simplicity invariably must be the prime factor in any successful poster design. The story on the poster is addressed to consumers on the move. It must reach them quickly and forcibly. Therefore, whether the dominant element in the design is to be a picture or simply some lettering, the layout and composition must be forceful and as simple in form as possible.

The art director responsible for designing posters realizes all this as he works to develop a presentation that will attract the instant attention of people passing on the highways, hold that attention for a few seconds and, in that fleeting period, imprint the pictorial and word messages on the minds of observers in a manner that will give a much stronger compelling and lasting impression.

Americans of today move faster, see faster, think faster, comprehend faster. A few years ago, it was sufficient that posters tell a complete story quickly, intelligently, and convincingly. Today, they must do so more quickly, more intelligently, and more convincingly.

Emotional appeal

To be convincing, a poster must appeal to one or more human emotions. To appeal to the emotions, the pictorial usually must have human interest. Many leading contemporary illustrators, artists, and photographers inject human interest into their advertising pictorials in one form or another, in varying degrees.

Whether the approach be dramatic, amusing, or emotional in nature, it must be authentic and complete. The prime essentials of a successful poster of today are:

An intelligent merchandising idea, a minimum of strong copy, and a dynamic pictorial, all artfully composed with maximum good taste, and properly and faithfully reproduced in gigantic poster panel size.

Just before World War II, an estimate as to the types of art media used for poster work showed about 95 per cent were paintings—50 per cent in oil and 45 per cent in water color, with some pastels—and the other 5 per cent direct color copy, such as Kodachromes and carbros and other similar products.

Color photography

However, use of the color camera has become more and more a factor in the development of poster sketches, perhaps because widespread camera consciousness has bred in today's American public an understanding and appreciation of the realism inherent in advertising messages illustrated with direct color photography.

Furthermore, poster-making techniques have progressed to the point where all colors in a poster can be han-

dled photographically, including the making of press plates; thus, original life-like realism caught by the color camera is retained on finished posters, even in the 24-sheet size.

Usually, during the development of a poster design, many rough sketches are made; then, when the rough idea has been approved, it is turned over to a designer to make a color and composition sketch. Some agencies and artists make it a practice to snap a number of camera shots of characters to be included in the final painting, to assure fidelity to type and expression.

Plain lettering

For plain lettering ("flat-treatment") posters, the finished drawing should be at least 10 inches high by 22½ inches long. A popular size for poster reproduction is 16 inches high by 36 inches long. For posters containing figure paintings, or designs with small details that must be kept accurate, the finished drawing should be made larger, even up to 20 x 45, depending upon the medium to be used in making these sketches.

Regarding direct color, carbro prints are an ideal form of color photographic copy, and gigantic 24-sheet posters can be made from Kodachromes and similar color transparencies even as small as 4 x 5 or 5 x 7 inches if they possess the necessary and essential cleanliness and sharpness of detail.

Wherever possible, a complete sketch always should be furnished; that is, lettering, illustration, background, and all the other elements should be in their proper places on the one sketch. The lithographer then can produce a better poster, faster; and, if photographs of the poster are desired before it is finished, these can be supplied without delay, thus speeding up the entire job.

Sketch ratio

In every case, it should be remembered that the sketch must always be made in the ratio of 1 to 2¼; that is, the length of the sketch must be two and one-quarter times the height. This perhaps can be more easily understood when it is realized that the dimensions of a completed 24-sheet poster are standard: 104 inches high by 234 inches long—just two and one-quarter times as long as it is high.

Regarding color, it should be borne in mind that the design will be enlarged many times. The sketch, therefore, should be bold in color contrast. The artist preparing the sketch also should realize that a poster remains out in the weather for at least thirty days.

For that reason, a minimum of so-called "fleeting" or "fugitive" colors should be used. Certain types of pinks, purples, blues, and greens, with which every poster artist should be familiar, have a tendency to fade when exposed to sunlight. They are shades that should be kept out of any large color areas in the design, unless the lithographer is to be allowed to approximate them as closely as possible with permanent inks.

Some of these colors can be matched and their life guaranteed for thirty days, but the extremely high price of the ingredients make the inks very expensive, as compared with ordinary inks.

Another factor for artist and production man to keep in mind is that the poster ultimately is to be cut into sections for posting. Where possible, a reliable lithographer should be consulted before the final sketch is made.

If shown the roughs, he may be able to suggest slight changes in layout that will eliminate poor matches and extra printings, without destroying the value of the poster design. Many times, he will be in a position to suggest proper strength of colors, slight changes in tones, etc., that may mean considerable saving in the final price of the work.

Sketch goes to lithographer

As soon as the finished, approved poster sketch arrives in the lithograph plant, ideal section and sheet divisions are determined and indicated on tissue overlays.

A large number of layout arrangements is possible, the only restriction being that a poster be so cut as to necessitate no more than five separate sections in most cases; and these sections must run from top to bottom of the poster in unbroken vertical lines. The horizontal division may vary.

That restriction as to poster divisions is dictated by the mechanical requirements of the lithograph printing operation. Originally, posters were lithographed in single sheets, the work size of each sheet measuring 26 x 39 inches, so that the 24-sheet poster, four sheets high and six sheets wide, had an overall work size of 104 x 234 inches. This same overall size is the one in use today.

During the years, larger and faster presses have been perfected, so that sheet sizes gradually have increased in area. Today in most poster houses, each printing sheet is 44 x 60½ inches—work size 42 x 58½ inches.

There are ten of these press sheets; two of them are cut apart to make four half sheets with a work size of 20 x 58½ inches, so as to maintain the total rectangular size of 104 inches high by 234 inches wide. A white margin all around makes the outside paper size of a 24-sheet poster 106 inches high by 236 inches long.

The lithographer may, on some designs, deem further divisions necessary; however, the Outdoor Advertising Association a number of years ago recommended that 15 poster sheets be the maximum number to be posted. Thus, a finished 24-sheet poster usually consists of 10 press sheets, some of which are cut apart to make a total of 12 or 15 pieces that then are posted together to make the complete "24-sheet" poster.

Poster divisions

The layout of ideal section and sheet divisions is controlled by the design itself. The layout must be fitted to the sketch with two aims in view:

1. To get the most faithful reproduction of the sketch with a minimum number of printings. Each section or sheet requires a certain number of printings; one may need only two or three printings, while another may require six or eight. A good average poster requires 30 to 40 printings, with 50 to 60 not uncommon when the sketch includes a large pictorial.

2. To avoid cutting through any elements, such as mouth, nose, or eyes of a face, or a trade-mark or thin-line lettering, to minimize mismatching in process and when posting.

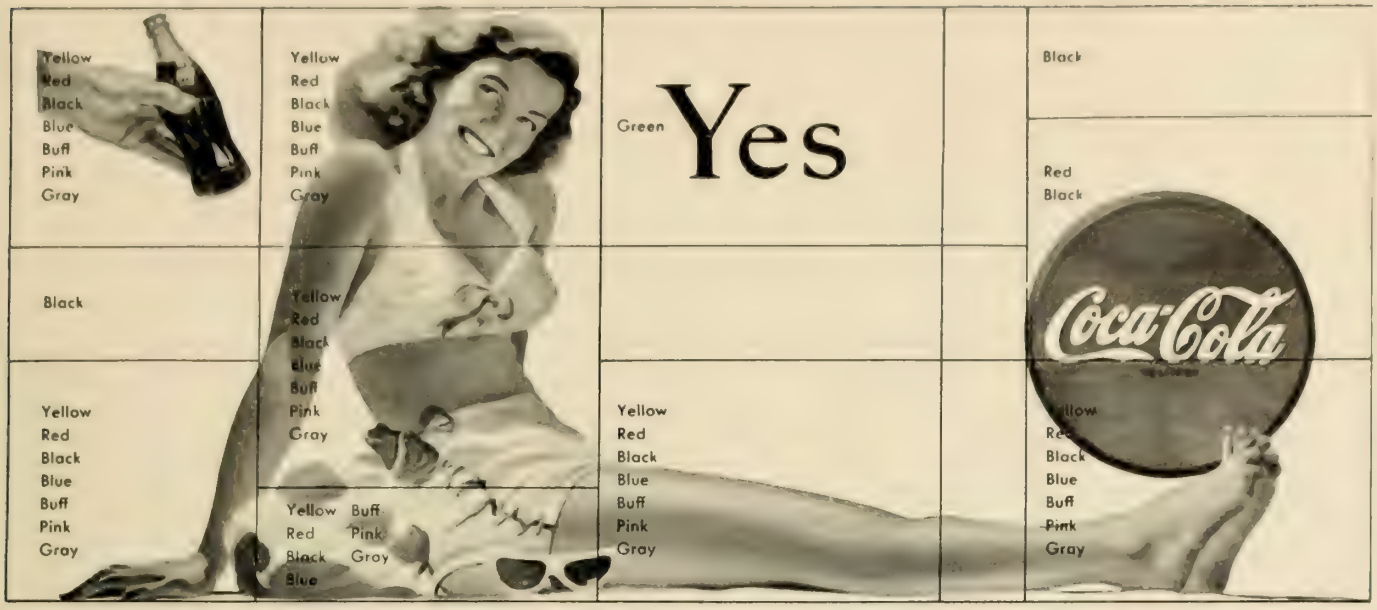
A greater number of printings need not necessarily mean a better reproduction; they may mean an uneconomical and inefficient layout. Greater skill and craftsmanship can evolve superior reproductions with fewer printings.

Preparing lithograph plates

When deciding on proper section and sheet divisions, the lithographer's plant planning board also determines the method of reproduction to be employed: all hand-drawn, combination of hand and photographic process, or all-photographic.

Poster subjects composed of all lettering and line work are ideal for the all hand-drawn method of reproduction.

Typical 12-sheet and 15-sheet layouts for "24-sheet" posters



Yes: This "Yes" Bathing Girl poster won first award at the Fifteenth Annual (1946) Exhibition of Outdoor Advertising Art. It was prepared for the Coca-Cola Company by D'Arcy Advertising Company, Inc., and was lithographed by Forbes Lithograph Manufacturing Company. Artist: H. H. Sundblom.

Poster layouts

The posters illustrated on this page show how typical posters are laid out for press sheets and for posting. The specific layout of any poster is determined by its design. The lithographer, for the sake of economy, lays out a poster so as to secure the finest possible result in a minimum number of printings. Invariably ten press sheets are used, which, when cut apart, usually make 12 or 15 poster sheets. The fine black or white rulings on the accompanying illustrations show how each poster was divided into sheets for posting. On the press, some of those sheets having the same colors were printed together on one press sheet. The various colors used in the lithographing of each section of the "Yes" poster are listed in each section. Buff, pink, and gray were used in addition to yellow, red, blue, and black, to obtain a most lifelike reproduction of the model. To produce the most effective green for the word "Yes", a green ink was used (rather than yellow and blue).









Credits: All the posters illustrated on this page were lithographed by the Forbes Lithograph Mfg. Company. Advertiser, agency, artist, for each are as follows:

Girl with mask: Advertiser, The Coca-Cola Company; Agency D'Arcy Advertising Co., Inc.; Artist, H. H. Sundblom.

Want some of my Drake's Cake: Advertiser, Drake Bakeries, Inc.; Agency, Young & Rubicam.

Tenderly yours: Advertiser, J. P. Squire Company.

My beer is Rheingold: Advertiser, Liebmann Breweries; Agency, Young & Rubicam.

Those that have a lot of lettering and line work, with some halftone pictorial, will be reproduced by a combination of hand and photographic process.

A few plants employ the all-photographic method of reproduction on practically all posters, feeling that the precision eye of the camera can come closer to portraying all the subtleties of the artist and the true realism of a photographic composition, with maximum authenticity and fidelity to the original.

Hand drawn posters

For a poster that is to be drawn either all or in part by artists, there are several methods that can be employed. In one method of reproducing all hand-drawn parts of the poster, a gelatin "scratch key" is made from the sketch. This key actually is a sheet of gelatin the size of the sketch.

It is placed over the sketch so that a key or tracing of the entire sketch can be engraved on the gelatin with a sharp point, outlining all the various color details, and also the sheet corner marks that previously have been indicated on the sketch. These corner marks also serve as register marks.

The lines and corner marks then are filled in with an opaque to make them solid lines on a transparent surface.

The key now is ready to be placed in a camera so that a line negative about 6 by 8 inches can be made of each of the 10 press sheets; each line negative then is projected photographically on a sensitized zinc "key" or master plate.

Zinc key plates

Each zinc key plate, carrying all the color and division lines and register marks, is etched slightly and placed in a transfer press so that impressions can be pulled in black ink on sheets of paper. These sheets are dusted with a brown powder, and the brown dust lines and marks then are transferred by pressure onto actual full size grained press plates—a step known in the trade as pulling "chalk offsets." As many of these offsets as will be needed on each printed sheet are pulled—one plate for each color is required.

The lithograph poster artist next draws in the necessary detail on each plate for each color, using a greasy crayon and following the key lines. He develops just the degree of coverage required for a tone by employing various methods of rubbing in the crayon, using the tip of his finger in some places, or rubbing with a piece of cheesecloth to give a stronger tone on a larger area.

Each press plate then is etched slightly and made ready for the press.

Projection method

Another method of reproducing by "hand" is to photograph the entire sketch on a negative about 6 by 8 inches and place this negative in a movable stereopticon projector. This projector is on a platform that can be moved forward and back on a track that is at right angles to a wall section large enough to accommodate an image of this negative in full 24-sheet poster size.

Sheets of paper that will become "key" sheets are placed on the wall in the exact position and size that the corresponding lithographed sheets will occupy as a finished poster. The position and size of these sheets already has been determined in arriving at the correct section and sheet divisions to best carry that particular poster design.

After focusing the camera by moving it to and fro until the enlargement of the negative appears on the blank sheets on the wall in exact finished 24-sheet size, an artist outlines all detail in the enlargement on all sheets, using a black crayon. These 10 "key" sheets then are transferred under pressure on 10 zinc plates.

After the artist goes over the lines that appear on each of these plates with a black, inky, liquid tusche, the plates receive a slight etch, and an impression in black ink is printed on white paper from each plate. These impressions are dusted with the special brown powder so that chalk offsets can be transferred on actual size press plates. From here on, the procedure is the same as outlined in the first method, for hand drawn jobs.

Photographic technique

On designs where the entire poster, or parts thereof, are to be reproduced photographically, the predetermined section and sheet divisions are indicated on the sketch, which then is photographed, through color filters in a precision camera, a sufficient number of times to provide a negative of each color of each printing sheet area.

This photographing can be done in either of two ways. In some plants, direct halftone negatives are made, then enlarged photographically directly onto a metal press plate whose surface carries a light-sensitive coating. After each press plate is developed, artists adjust the tone values by reducing the size of the halftone dots by progressive development, or by rubbing up the dots.

In other plants, a continuous tone negative is made of each color, and from these, ground-glass positives. Retouching is carried out on these positives to correct the tone values that the camera did not reproduce fully and faithfully.

Projecting negatives

The retouched positives then are used in making regular halftone negatives; usually this negative will carry one-half of the poster. The halftone negative for each color then is projected in full press sheet size onto a sensitized press plate.

If a 250-line screen has been used in making the halftone negative, the screen becomes about 35-line when projected up to full poster size. These negatives carry register marks so that each halftone press sheet can be registered accurately to other halftone and hand-drawn sheets. As with hand-drawn plates, the halftone plates then receive a slight etch and are made ready for the press.

In any case, whether working from keys or working on plates prepared photographically, the trained poster artist has an opportunity to bring into play all his skill and craftsmanship in preparing the printing plate so that all the design and color value of the sketch will appear on the finished poster as a true and full reproduction of that sketch.

Lithographing the poster

Posters are produced on rotary lithograph presses, either offset or direct, depending upon the nature of the design. Because great strength of color is required in large areas on posters, direct presses are used in a greater number of instances.

No proofs are pulled and submitted of 24-sheet posters. The large number of sheets and printings involved in the production of a 24-sheet poster prohibit such submission from the standpoint of both cost and time. Careful adjusting of ink and plates is carried on as the job progresses on the presses.

The sequence of printings varies in different poster plants. Yellow usually is printed first because it is an opaque color. Some plants follow with red, black, blue, pink, and gray. Some occasionally may use a buff or flesh color where flesh or a similar color tone must



There is an abundance of eye appeal and effectiveness in the current series of Package Inserts developed and produced for KNOX GELATINE.

by FORBES LITHOGRAPH CO

A USER OF YOUR PRODUCT . . . one of your best potentials for repeat and additional sales.



PACKAGE INSERTS permit you to talk directly to that user, *just as the product is about to be used*—to assure proper use; suggest various applications; feature other products.

Grace your Package Insert with plenty of EYE APPEAL, so as to command and hold the attention of that user long enough for your message to get across.

EYE APPEAL: Ingenuity in approach; neatness and smartness of layout and design; generous use of color, whenever possible; change of pace, to add NEW eye appeal.

We can develop resultful EYE APPEAL on your package inserts—we've done it on over ONE BILLION, for leading American manufacturers.

FORBES LITHOGRAPH CO.

NEW YORK CLEVELAND CHICAGO ROCHESTER

P. O. Box 513 Boston 2

be matched on several sheets, running the tone solid over the entire area, except the high lights. Black is not used much in flesh tints and other delicate areas. The blue pulls together many elements in the design. Gray is an important color that helps to reproduce delicate tones and values usually present in paintings.

Because posters carry a great deal of color, sometimes as much as 30 to 40 pounds to 1,000 sheets, the printed sheets are piled in trays as they come off the press, to permit thorough drying without offsetting onto the succeeding sheets.

Collating and shipping

As soon as dry after printing, the sheets are trimmed and those carrying the half-sheet areas are cut to size. They then are inspected, folded, and collated into complete 24-sheet posters ready for shipment to billposters.

Proper collating of each poster is of vital importance to all billposters. Poster sheets usually are folded to a size of about 12 by 31 inches and collated so that sheet No. 1, which is to be pasted in the upper left-hand corner of the poster panel, is on the outside.

If the collating is properly done, the billposter will next find sheet No. 2, which is pasted below No. 1, then sheet No. 3, which he pastes below No. 2, and so on in proper progressive order.

The billposter pastes the sheets from top to bottom in each section, and progresses from left to right on the poster panel by sections. Sheet No. 1 has a small layout of the sections and sheets stamped on the back, so that the billposter may plan his work when he starts.

Rain lap posting

The sequence outlined above applies to the regular, or standard, method of posting. Another procedure, known as "rain lap" posting, is a method whereby the sheets are posted from bottom to top in each section, so that the upper sheet overlaps the lower one to shed rain, like shingles. For the rain lap method, the printed sheets must be trimmed and collated in the proper manner for that type of posting. The section diagram on the outside fold of the complete poster is stamped "Must Be Posted Rain Lap" as a caution to the billposter to plan his work that way.

After collation, the posters are counted and wrapped into bundles ready for shipment to posting houses all over the area of use. This posting area may be a local territory, a specific section of the country, or a complete coverage of the entire country. Size and scope of the area will depend upon the nature of the product being advertised and the scope of the merchandising activities of each manufacturer.

In every case, plans must be formulated by the lithographer, when production of the poster is started, to schedule all work so as to have posters in the hands of posting companies on or before contracted date of posting. There can be no lapse of time; poster panel space is a valuable medium of advertising, and must be respected as such; every minute of posting time must be utilized during the entire period of every month.

Ink and paper

Some idea of the importance of ink and paper in outdoor advertising may be gained by contemplating the rugged duty each poster must perform. Posters are required to exhibit their advertising-and-selling picture-and-word story to the public over a period of at least a month, out of doors.

During this month, they will be exposed to the ravages of many kinds of weather conditions—driving rain, sleet, snow, blistering sun, ripping winds, and freezing and thawing temperatures. They should appear just as fresh on the 30th day as the day they were posted. The use of proper paper and ink determines to a large extent just how successful the operation will be.

Progressive lithographers maintain laboratories where all inks and all their component ingredients are checked continually. Careful and consistent color checking is the only sure way of being positive that standard inks and ingredients are being maintained in quality, and of discovering and certifying new developments in colors, lithographic varnishes, and other ingredients.

The paper usually employed in outdoor advertising is a white machine finish, basis weight 60 pounds to 500 sheets, and the size 25 by 38 inches.

Flagging

Just before the war, much wider general use was being made of papers having a special rough finish on the back. These rough back papers were the result of efforts to eliminate an unsightly condition known throughout the trade as "flagging"—the peeling away of edges and corners of poster sections as a result of action of rain, sun, and temperature.

Papers were developed and produced with a rough condition on the back that had a greater affinity for paste and, as a result, clung more securely to the poster panel and to other sheets over which they were lapped along the edges.

As the paper situation returns to normal, it is reasonable to assume that "flagging" of poster sections will again come under severe scrutiny and that papers again will be produced to eliminate that ugly disfigurement of those poster designs so painstakingly and artistically created, developed, and produced.

(EDITOR'S NOTE: The following data is based on a report issued by the Lithographic Technical Foundation, Inc.:

Flagging is caused primarily by a combination of tension in the sheet and a tendency of the sheet to curl away from the board as a result of superficial drying, while the paste is still wet underneath. This combination of forces probably exists in every poster during drying, but does not always result in flagging.

To avoid flagging, the poster, especially where there are large areas of solid color, should be lithographed either with a minimum of ink, or with an ink that, when dry, permits relatively rapid escape of moisture from the glue. Care should also be taken to keep the laps clean. If good adhesion is obtained at the lap, flagging is less likely to develop.

Posters carrying heavy colors on large areas can be hung to best advantage on cloudy days, early mornings, or late evenings. When the temperature is low and the humidity high, the shrinking and curling tendency of the sheets while drying and before the glue has set will be at a minimum.)

Types and sizes of posters

In addition to the 24-sheet, there are a number of other types and sizes of posters in use in the United States. They include 1-, 2-, 3-, and 4-sheet posters, seen most generally on panels adjacent to transportation lines and on outside walls of buildings near shopping centers; station posters that appear on panels at automobile service stations, and wagon posters, used principally by the express companies.

Poster designs may be developed that, with a little re-arrangement, can be used on the various types of posters. Orders

to lithographers often include other sizes to carry the same poster design.

Standard 24-sheet

Inside dimension of panel	144" x 280
Standard overall paper size	106" x 236"
Work, or design, size	104" x 234"
Blanking ..... Sides, each	24"
Top	10½"
Bottom	10½"

Actual blanking space will vary, as panel sizes around the country differ slightly. (Blanking is white unprinted paper used to fill in the space between the outside of the poster and the inside of the panel molding.)

One-sheet

Metropolitan New York, on the I.R.T., B.M.T., and Independent subway systems:

Inside dimension of panel	30" x 46"
Paper size not to exceed	29½" x 45½"
Work size of poster	29" x 45"

Chicago area, where the elevated line's panels vary slightly from those in the Metropolitan News York area:

Paper size	28" x 42"
Work size	27½" x 41½"

In cases where one-sheets are ordered for national distribution, the sheet size usually specified is 28 x 42 with the work size varying, as some advertisers want ½-inch white margin; others a 1-inch margin. Blanking paper can be used in the metropolitan areas to fill up the panel.

Two-sheet

Inside dimension of panel	46" x 60"
Paper size not to exceed	45½" x 59½"
Work size	45" x 59"

This work size varies, depending upon advertisers' requirements for margin. Two-sheet posters usually are produced in paper size of either 42 or 44 x 59½, with separate thin strips used to fill out the dimension.

Three-sheet

Inside dimension of panel	42" x 84"
Paper size not to exceed	41" x 83"
Work size	40" x 81"

Again, work sizes will vary, depending upon the advertisers. For instance, an advertiser may prefer a smaller than average work size, to allow for stretch when pasted and to provide a wider white margin around poster to set it off from the panel border. Three-sheet posters, because they are larger than press sheet size, are produced in one sheet 42 x 56 and a small sheet 42 x 27, allowing a lap of one inch between each sheet.

Car cards

The sizes of car cards, a form of outdoor advertising, should be considered, particularly because many advertisers tie in their car card advertising with their poster advertising, running the same design on all items.

Originally, there was one size for car cards: 21 inches long by 11 inches high. Today, there are a number of sizes, to take in double-length cards, odd size areas and the various end panels in transportation vehicles:

Single	21" x 11"
Double	42" x 11"
Odd	14" x 11"
	28" x 11"
End	44" x 16"
	22" x 21"
	27" x 21"

Silk screen, gelatin, letterpress

While lithographed posters comprise the greater proportion of outdoor advertising, other processes can be employed when the quantities required are small, from 50 to several hundred. In some cases, the silk screen method of reproduction can be the most economical. On such posters, designs must consist principally of flat color areas, although some progress is being made in halftone and process color reproduction by this method. Airbrush can be used to good advantage in creating fine effects where a figure or a package is part of the design.

The paper generally used for silk screen work is a 70-pound white offset which, while not so tough or durable as the regular machine finish poster paper, is quite satisfactory in most cases, particularly if varnished with silk screen process varnish which protects against the elements or coated with a lacquer finish.

The photo-gelatin process can be employed where runs are short and where an illustration forms the major part of the poster. While uniform control of color still is a problem, full-color effects sometimes are possible with a few colors. No screen is used in this process.

A very few posters are reproduced by letterpress, owing to the prohibitive preliminary costs of huge photo-engravings and type for the large size printing areas and pictorials in poster designs. Some posters, simple in design and made up of blocks of flat-color areas or large text, can be printed from woodcuts or from rubber plates. Most car cards are reproduced by letterpress, but in cases where large advertisers use the same design on their car cards as is on their posters, the car cards are usually lithographed.

The role of posters

The coverage that may be obtained with posters is flexible; the intensity of coverage can be practically what the advertiser needs. A full showing is planned to cover an area thoroughly and uniformly. A half showing ("representative") will cover the entire area but on only half the posting panels provided in a full showing.

Quarter- and three-quarter showings can be had, but the former are available only in cities of 50,000 population or more. No showing of less than one month is available, except in special local endeavors.

Posters are a good medium to tie in with local dealers. They can be imprinted with the local dealer's name: but in the designing of a poster for that purpose, the imprint should be kept on one sheet, for economy.

It costs an average of $10 to $20 each to put each poster sales message on a poster panel and keep it there for thirty days. The price differential between an inferior poster reproduction and one of the highest quality is but a few cents each. In the long run, it will be found most economical to buy only the finest of designs and reproductions at a price commensurate with the desired results. The buyer, however, should then see that he gets what he pays for.

There should be sufficient long-range planning so that the poster campaign can be fitted into the all-over advertising effort, and designs created and developed in keeping therewith. Of equal importance, the lithographer should be allowed sufficient time so his poster artists and other production facilities can do full justice to the poster sketch.

Marketing considerations

There is more to poster outdoor advertising than merely getting some posters posted on panels. The poster design should be predicated upon a sound marketing idea, and should present that idea forcefully and effectively, but not offensively.

The buying of space should entail careful spotting of market areas suitable for the product, and traffic flow at posting points. After the posters are up, there should be frequent checking of poster locations, value of showings in relation to competitors' efforts, poster appearance, and any other factors the advertiser may want checked.

Close cooperation between advertiser, agency, artist, and lithographer can do much to maintain poster advertising at its high pitch of efficiency and effectiveness, by maintaining good taste and quality of appearance both in the design and in the ultimate reproduction.

AMERICAN COLORTYPE COMPANY

ENGRAVERS · PRINTERS · LITHOGRAPHERS · PUBLISHERS

CHICAGO, NEW YORK, CLIFTON, N. J., COSHOCTON, OHIO

Fine color printers for over half a century, pioneers in three and four-color process engraving and printing.

Our letterpress engraving plant in Chicago has over 10,000 square feet of studio space in which we can set up and make color separation negatives of a small package or an entire room and its furnishings. The press-room is equipped with modern single color, two-color, four-color, and five-color presses.

In our Clifton engraving plant we produce what our customers call the finest offset reproductions of paintings they have seen. At Clifton we make offset engravings and press-plates, print on one, two and four-color presses and do bronzing, dusting, plating, embossing, varnishing, gumming and die-cutting. We also operate a large battery of single and two-color letterpresses.

As soon as the present shortages of materials, labor and machinery have passed we hope to again solicit orders for BLOTTERS, BOOKLETS, BOOK ILLUSTRATIONS, BOX-WRAPS, BROADSIDES, CALENDARS, CATALOGS, CHARTS, CIGAR BANDS and LABELS, CHRISTMAS CARDS, CHRISTMAS TAGS and SEALS, DIRECT MAIL CAMPAIGNS, DISPLAYS, FOLDERS, GREETING CARDS, JUVENILE BOOKS, LABELS, MAPS, MACYART (3 dimension printing), MAGAZINE INSERTS, METAL SIGNS, PAPER NOVELTIES, PICTURE POST CARDS, POSTERS, WINDOW DISPLAYS, etc.

When you need color printing write our nearest Sales Office.

200 FIFTH AVE., NEW YORK 10, N. Y. • 1151 ROSCOE ST., CHICAGO 13, ILL.

THE Strobridge LITHOGRAPHING CO. CINCINNATI, 12, OHIO

Originators of the 24 Sheet Poster and Producers of its finest examples

WINDOW DISPLAYS
BOOKLETS • CAR CARDS

NEW YORK OFFICE: 250 PARK AVE.
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CLEVELAND OFFICE: 1900 EUCLID AVE.
Telephone: Cherry 5511

CHICAGO OFFICE: 221 NO. LaSALLE
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We are Specialists!



Booklets • Catalogs • Folders • Broadsides
Fine Color or Black and White work
Press sizes to 38 x 50

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312 EAST 23rd STREET • NEW YORK 10, N. Y.
Algonquin 4-9421

Decalcomanias

Designs printed on special papers form a film that can be easily transferred from the paper to glass, wood, china, enamel, and other surfaces

Sherrod Anderson

What they are: Decalcomanias consist of a film of paint or ink that forms a picture or design, always in several layers, built up on a paper backing, from which it may be removed easily through the application of a little water.

How used: The film adheres to surface being decorated with the aid of a special adhesive, called "stickative," which is a part of the decal itself, or through the use of a quick-drying varnish as explained below. The paper backing is moistened and removed, leaving the design upon the surface to which it has been applied.

Advantage: For only a few cents, designs in many colors can be made and applied to surfaces; if applied by hand, they would cost several dollars.

Where used: On furniture, hardware, store windows, autos and auto parts, mirrors, glass doors, typewriters, walls, toys, china, enamel ware, railroad cars (both interior decoration and exterior lettering), seals on liquor bottles, permanent perfume bottle labels (collodion type), city and state cigarette tax stamps applied to the outside cellophane wrappings, truck lettering.

Printing processes employed: Lithographic stones on flat-bed presses are used to build up most decal films on the paper. Some are made on rotary presses, using a metal lithographic plate. Silk screen, other processes are also used.

Special papers and inks: The special papers used are kept in the air-conditioned pressroom before and during all processing, so that they will not expand or contract with atmospheric changes. This is vital because many more press impressions are employed than in other forms of printing, and good register requires a "conditioned" paper. The pigment film also must remain the same size during successive impressions. Special inks are ground to meet this and other needs of the printer or lithographer.

Single or simplex paper: The paper surface is very porous and covered with a water-soluble coating of starch, albumin, and glycerin. Has blotting-like surface.

Double or duplex paper: This consists of a thin tissue backed by a heavy supporting sheet that is easily separated at the time of application. It is coated in same manner as the "single" paper.

Regular or varnish decals: These are printed face down on the coating on either "single" or "double" paper. They are used, for example, on the sides of trucks, or on machinery, such as typewriters. The film of ink that is to appear as the outer one is applied first. Subsequent printings put on the more opaque colors, with several coatings of opaque white, which is invisible in the finished job, applied last to strengthen the film.

Metallic decals: Bronze, aluminum leaf, actual gold leaf, or colors that approximate the color of gold or silver can be used. Aluminum leaf can be applied to letters prepared with tacky varnish, the surplus being brushed away as in window sign painting. The fragile metal is protected with additional color prints. To apply, the back of the transfer is coated with varnish. The decal is put in position and rolled down, to make perfect contact with the surface. The paper is wet to dissolve the coating, then drawn away, leaving the decal on the surface.

Regular decals on duplex paper: These are used when letters are open and have no background. Application is the same as regular decals, except that the heavy backing paper is removed first, before soaking with water, leaving a thin tissue paper that is soaked with water and removed after operator sees that every part of the transfer is in even contact.

Window decals: Similar to regular decals, these are easier to apply. They are printed face up, with the colors to be in direct contact with the glass printed last. If diecut, the stickative can be spread on the completed film with a stencil, so that it covers only the design that is to be transferred. When the design is very complicated diecutting may be difficult.

Window decals to be read from both sides: These are built up on the paper layer by layer until the design to be seen from the inside is complete. Then several opaque layers of ink are printed on it. On this surface, another design is lithographed, this time colors nearest the subject being printed last. A job of this kind requires 42 printings.

Slide-off decals: These are used on machines, tools, toys, hardware, furniture, etc. (Regular decals can be used on these surfaces where the various elements of the design are not actually linked together.) The adhesive comes from the coating on the paper. Several opaque coatings are printed to provide background and to add strength. Next, the design itself is printed. The last film of clear lacquer covers the design.

Mineral decals: Used primarily for chinaware, kitchen ranges, etc., These are made with mineral colors that require firing to become permanent. This is done in the plant manufacturing the object. Otherwise they are as "regular" decals, duplex face down.

Lacquer decals: The film is made of white lacquer, usually applied directly to the paper and then lithographed. These are used a great deal for putting trademarks on gasoline pumps.

Name-plate decals: Made of much harder pigments than the ordinary transfer, and coated with either a glossy or nonspecular finish. They are resistant to high abrasion, and through the use of various solutions and cements may be applied to crinkle finish, aluminum, cadmium, and nonspecular finishes. They are used where difficult surfaces are encountered, or where special adhesion or resistance to wear may be required.

Here's your CHECK LIST for buying *Decals*



LONG LASTING? Palm Brothers Decals are made with *bonded pigments* that literally defy wear. Their rich brilliance of color is permanent.

EASY TO APPLY? Special adhesives on Palm Brothers Decals insure smooth, easy application. Rigid inspection at factory assures no "duds."

PACKED RIGHT? Palm Brothers Decals are packed in "air conditioned" boxes, made individually to fit the decals on each order. Special waxed sheets are placed between each decal so there is no curling and no drying out.

SKILFULLY DESIGNED? Top-notch artists execute every Palm Brothers Decal, whether it's a reproduction of your own design or a sketch we prepare. (No obligation for our sketches)

PRICED RIGHT? Palm Brothers bring you the savings of the mass-production of the world's largest exclusive manufacturer of decalcomanias. Small orders are assembled and sent through giant presses at one time to bring you the economy of a "gang run."

THE PALM BROTHERS *Decalcomania Co.*

WORLD'S LARGEST EXCLUSIVE MANUFACTURER OF DECALCOMANIAS

3706 Regent Ave., Cincinnati 12, Ohio
Offices in New York, Chicago and Other Cities

Free Booklet

"What Decals Can Do For You." What they are and 23 profitable ways to use them. Write for it.



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Marbridge
PRINTING COMPANY INC.

A name known to buyers of printing since 1914 for dependable service.

Our courteous and able staff is ready to serve you.

•

225 VARICK ST., NEW YORK 14

AT LAST —

30,000 SQUARE FEET FULL OF COMPLETE DECORATING AND PRINTING FACILITIES— *ALL UNDER ONE ROOF!*

LARGEST PLANT IN THE EAST

DECALCOMANIAS
TRANSFERS
5-10 DAYS

NO NEED TO WAIT 5—10 WEEKS FOR DELIVERY
Transparent Labels - Name Plates - Valances
Dealer Window - Trade Marks - Decorative - Truck
For easy application to Glass, Metal, Wood, Plastics
HIGH QUALITY - FLEXIBLE - DESIGNED BY
AN EXPERIENCED ART STAFF
DECAL APPLICATION SERVICE AVAILABLE

Direct Printing & Decorating of **CONTAINERS** For Cosmetic & Other Industries
•
Glass - Plastic - Bottles - Jars
Flat, Round and Odd Shaped
•
We can print on your premises if necessary

In our GLASS WORKING DEPT we make Radio and Instrument Dial Faces & Panels
•
Glass Panels Transparencies with Mirror Design Effects
•
Transparent Mirrors
Edge Grinding - Beveling
Hole Drilling

In our SILK SCREEN PRINTING DEPT.
Window & Counter Advertising Displays
Signs of Glass, Metal, Wood, Plastics, Cloth.
Chain Store Novelty Items, Tray, Mats, etc.

ALL THESE FACILITIES AVAILABLE IN ONE SPOT AT
THE O. AUSTIN CO.
335 THROOP AVE BROOKLYN 21, N. Y., ST 3-3858

Lithographic conversions

Process makes possible production of lithographic printing plates from photo-engravings without a moire; high quality is secured economically

William H. Elliott

When photo-engravings of one or more colors made for letterpress printing are reproduced lithographically, they are called lithographic conversions. Such conversions permit economical enlarging or reducing of illustrations. The more completely the halftone dot structure is retained by this method, the better the quality of the conversion.

Conversions are more frequently used when a four-color letterpress advertisement has been run in some media, such as a magazine, and the same illustrations are desired for other supporting material such as envelope stuffers, window or counter displays, direct mail brochures, or pamphlets, in which art work must be faithfully reproduced in different sizes.

Plates for conversions can be made from chalked engravings or black-and-white proofs that are photographed with corresponding loss of image. A newer type of conversion called Napconversion uses the original engraving. Each color is inked and the image is transferred by means of a proving press to an acetate base, making a positive image, which is then combined with the deep etch process. In this way, the original dot structure is held on the lithographing plate. Conversions can also be made from continuous tone positives used in making gravure plates.

Paper used

As with customary lithographed productions, a wide range of papers can be used for tone copy and for color work, all giving excellent results. Coated or uncoated stocks can be employed with equal success. This opens up an entire new field for four-color reproduction.

Reductions of plates usually lead to inferior results and involve loss of detail because of the increased number of dots per square inch. It is now possible, however, to reduce 120-line screen copy as much as 33⅓ per cent with satisfactory results. In some cases, reduction of as much as 50 per cent has been successfully accomplished.

Enlargement presents no particular problem. This is done to make giant ads or posters that are viewed from a distance. While the dot pattern is pronounced at close range, the visibility improves as the distance is increased.

In addition to making possible economical reproduction of color work in different sizes and on various paper stocks, lithographic conversions permit selective reproduction; that is, reproduction in full color of part of the original subject or plate, enlarged, reduced, or same size. Most partial subjects can be combined with new backgrounds, or with parts of another plate, or run by themselves if so desired. No register difficulties are risked.

Litho conversions permit distribution of initial cost of color engravings over several jobs and economical introduction of color into auxiliary advertising. The illustration below shows an original four-color process ad adopted to other purposes.

Conversions can be used advantageously when the size of the original engraving is changed, different stock is used, part of the original illustration is utilized, catalogs are reprinted abroad, and when a complete campaign is combined on a gang sheet. See below.



Conversion process: 1. The original four-color process advertisement that appeared in the magazines. 2. Blow-up of the ad to be used as a mailing piece, window display, or poster. 3. Showing the featured subject lifted from the original background and inserted in another for the front of a catalog and price list. 4. Still another use of this feature—an envelope stuffer.

Laurel Process Company, Inc.

OFFSET LITHOGRAPHERS
SINCE 1912

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NEW YORK 1, NEW YORK • TELEPHONE · WAtkins 4-5600 ·

ONE OF NEW YORK'S OLDEST SHOPS

John Walter
RIDLEY

ESTABLISHED 1883



DESIGNERS • ENGRAVERS
PRINTERS
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30 WEST 15th STREET
CH elsea 2-6887

THIS SPACE
we dedicate as a greeting to our friends who have accorded us a reputation for being intelligent, honest, first-class CRAFTSMEN...and to those whose needs for creative promotion material might lead them to become friends too.



PRINTERS
LITHOGRAPHERS

CHELSEA 3-9004

TRIGGS COLOR PRINTING CORPORATION
216 West 18th Street, New York 11, N. Y.

Specialists in Book Publisher's Requirements

Typing for offset

Machines and devices now available permit typing of copy with an even touch, with clear, black characters, and with a straight right-hand margin

Clarence Monday

For certain kinds of copy to be reproduced by photo-offset, and sometimes by letterpress, it is often desirable for reasons of either design or economy to make plates directly from the typewritten copy. When the typed copy is so being used it is desirable to have it as clean, as sharp, as perfect as possible and to have the copy typed with an even impression and with neat, even right-hand margins. To assist in preparing such copy a number of typewriters, typewriter attachments, special ribbons, and touch control devices are available.

Typewriters, such as the IBM models, the Remington Noiseless, Underwood, and Vari-typer A-20, A-9 as described below, automatically justify right hand margins of copy on the second typing.

Attachments adaptable to all standard makes of typewriters that also make possible typing copy with an even right-hand margin on a second typing are the Edison margin justifier and the Justi-typer.

The Royal, Smith-Corona, Underwood and Vari-typer machines also have models that can justify by inserting or removing half spaces between words.

Automatic justifying typewriters

Require some preliminary typing or calculation. Justify automatically on the second typing.

IBM electric executive typewriter: With proportional spacing. Completely electrically powered, available in 12-point book face, 12-point fine line, and 10-point modern type. Gives justified right-hand margin with double typing. Carbon paper ribbon. For distinctive letter writing, direct-to-plate, and photographic masters. Available in 12-inch carriage only. (International Business Machines Corporation, New York City)

IBM electric carbon ribbon typewriter: Completely electrically powered, operated by two-ounce touch. Will not give justified right-hand margin. Can be purchased with many styles of type. Carriage widths up to 30 inches. Uniform impression control. (International Business Machines Corporation, New York City.)

Remington noiseless: Preliminary typing required. At end of each typed line, the number of spaces below or above the predetermined line is indicated automatically by spacing indicator. The indicated number is typed on the copy at the end of each line as a guide for final copy. Impression control, pressure printing construction. Various carriage widths available. Carbon ribbon attachment and improved right-hand margin justifier temporarily unavailable but will be on market in near future. (Remington Rand Inc., New York City)

Underwood: Requires preliminary typing in which, at end of each line, the number of spaces short of or over the predetermined line is indicated automatically by spacing indicator attached to left marginal stop. This number is typed on copy after each line as guide for final copy. Before typing each line of final copy, the justifying rack knob is turned to indicated number and each line is justified automatically. Carriage lengths are 11, 14, and 20 inches. (Underwood Corporation, New York City)

Vari-typer A-20, A-9: Each line is typed until pointer on dial indicates justifying zone has been reached. After tabulation, line is retyped, and machine stretches copy automatically to desired width. Electric machine with uniform impression control, variable at operator's will with simple touch keyboard. Wide variety of print, gothic, foreign, and special type faces may be used on one machine, with types changed quickly. Uses 1,200-foot carbon ribbon. The machine is available in carriage lengths ranging from 9 to 20 inches. (Ralph C. Coxhead Corporation, New York City)

Additional attachments

Adaptable to all standard make typewriters, and require two typings, as described in detail for the machines mentioned in the column at the left.

Edison Margin justifyer: A device for automatic justifying of right-hand margin by condensing or expanding pre-typed lines to the extent noted on a visible indicator, without half spaces or skipped spaces, to a total range of eight characters. Can be installed easily without in any way marring the typewriter, and can be neutralized whenever normal operation is desired. This device may be used with any typewriter, with any carriage length, and with any type face that may be desired. (Justifier Sales Company, Los Angeles, Calif.)

Justi-typer: Inter-word spacing is used; copy is typed and may vary seven spaces on either side of desired length. Inter-word spaces and excess or deficient characters for each line are counted. These combined data afford a code for each line. In retyping, spacer is adjusted according to this code. (The Justi-Typer Company, Cincinnati, Ohio)

Half-spacing typewriters

Copy written for second time may be justified by inserting or removing half spaces between words.

Carbon ribbon photo-offset typewriter: Two-purpose, used with either carbon or fabric ribbon. Operator switches from regular typing to specialized work for reproduction merely by moving two convenient levers and removing ribbon spools in use. Half back-spacer is standard equipment with this machine. (Royal Typewriter Company, Inc., New York City)

Royal: Has touch control as well as carbon ribbon attachment. Half back-spacer may be attached to any Royal typewriter very inexpensively. (Royal Typewriter Company, Inc., New York City)

Smith-Corona: Half-spacing, a regular feature, is accomplished with space bar that moves carriage a half-space when depressed, a half-space when released. By holding bar down while striking a letter, that letter prints a half-space to left of normal. Available in standard or silent typewriters in carriage widths of 11, 12, 14, 18, 20, and 25 inches. (L. C. Smith & Corona Typewriters Inc., New York City)

Smith-Corona carbon ribbon machine: Equipped with fabric ribbon and one or more carbon paper ribbons. Fabric and carbon ribbons may be used together or separately. Will handle regular correspondence as well as positive and/or negative masters, Multilith plates, and continuous forms. In all carriage widths. (L. C. Smith & Corona Typewriters Inc., New York City)

Underwood: Dual touch tuning by means of individual key tension adjustment and touch tuning feature. Available in carriage widths of 11, 12, 14, 18, 20, and 26 inches. Carbon ribbon device with half-space escapement feature available on 11-, 14-, and 20-inch models. (Underwood Corporation, New York City)

Vari-typer No. SM-9: Including carbon ribbon attachment and half back-spacer for justification. (Ralph C. Coxhead Corporation, New York City)



Distinctive Copy for Offset . . .
IBM ELECTRIC
EXECUTIVE TYPEWRITER

The IBM Electric Executive Typewriter represents the highest achievement in typewriter engineering since the advent of the typewriter. Proportional Spacing brings to the offset printing industry a means of preparing photographic and direct plate masters with the grace, distinction, and easy readability found in the finest printing. Combining all-electric operation, a nearly level keyboard, impression control, and perfect uniformity of results, this machine sets a new standard of perfection in typewriter art.

OUTSTANDING FEATURES

PROPORTIONAL SPACING Each character takes the amount of space it requires, determined by width, rather than an equal amount of space regardless of width, as in ordinary typewriter spacing.

Ordinary Spacing	abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ
Proportional Spacing	abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ

CARBON PAPER RIBBON The use of a carbon paper ribbon provides that each impression is made with a fresh deposit of carbon. This assures greater consistency of color and a cleaner, sharper impression than ever before possible.

WORD EXPANSION An Automatic Word Expander Button, located conveniently above the keyboard, inserts an additional 1/32 of an inch between letters for emphasis in headings.

Regular	CREATION OF PROPORTIONAL SPACING
Expanded	C R E A T I O N O F P R O P O R T I O N A L S P A C I N G

Two space bars make possible the expansion or contraction of entire sentences. One bar moves the carriage two units of 1/32 of an inch each. The other moves the carriage three units. Through the selective use of these space bars a variety of attractive arrangements in spacing may be obtained.

STYLED TYPE Three styled type faces are available -- 12 point Book Face, 12 point Fine Line, and 10 point Modern.

Book Face	This is a sample of 12 point Book Face type.
Fine Line	This is a sample of 12 point Fine Line type.
Modern	This is a sample of 10 point Modern type.

JUSTIFIED MARGIN An even right-hand margin can be easily obtained by means of double typing. The finished copy has the grace and distinction of a printed page.

THE ENTIRE COPY FOR THIS ADVERTISEMENT WAS PREPARED ON AN IBM ELECTRIC EXECUTIVE TYPEWRITER WITH MODERN TYPE, AND REPRODUCED BY OFFSET LITHOGRAPHY.

Form No. 55-3472-1 - Printed in U.S.A.

IBM

ELECTRIC TYPEWRITERS — Electric Punched Card Accounting Machines and Service Bureau Facilities · Time Recorders and Electric Time Systems · Proof Machines

International Business Machines Corporation, World Headquarters Building, 590 Madison Avenue, New York 22, N.Y.

Trade Customs

Formalized into contractual status, trade customs affect every job undertaken by the various graphic arts manufacturers and trade groups involved

Compiled by Daniel F. Kennedy

Of particular importance in the preparation and processing of advertisements from original copy to the printed page are the trade customs of the various Graphic Arts manufacturers and craft groups involved.

These customs, which have been formalized into contractual status, affect every job undertaken by the printer, lithographer, electrotyper, mat-maker, or stereotyper.

They include clauses involving prices, overtime, cancellations, alterations, loss of copy or type or plates, and a host of other factors that while seemingly insignificant can, if overlooked, result in a considerable increase in a job's cost.

These customs also are vital because they form the basis of the working conditions of the plant involved, and are the ultimate determining factor in case of dispute as to terms or conditions of production.

The Printing Trade Customs were compiled by the Printing Industry of America, Inc. The Uniform Conditions of Sale were established by the Lithographers National Association. The Electrotype Trade Customs were compiled by the International Association of Electrotypers and Stereotypers.

In addition to these, there are the Standard Matrix and Stereotype Trade Customs, also evolved by the Electrotypers and Stereotypers Association of New York. This list is not reproduced in full here because in many respects it is very similar to the Electrotype Trade Customs.

Among other factors, the Matrix and Stereotype Customs include the admonition that all cuts or illustrations locked up in type forms be type high and blocked on solid metal, with high metal furniture and spacing. If type is not in a chase, a lock-up charge will be made and the mat-maker will assume no responsibility for slipping or justification of the matter.

He also assumes no responsibility for damage to type or cuts, nor for mat shrinkage, holding a press waiting for plates, corrections, or changes. There is an extra charge on plates made from partial sections of plates or forms.

All the engravings or electrotypes should be carefully routed and trimmed to insure sharp, clean mats and stereotypes, with engravings etched to maximum depth, as good stereotyping cannot be done from shallow patterns with ragged edges or high shoulders. An extra time charge is levied on plates requiring extra tooling and trimming.

Printing trade customs

1. Orders regularly entered cannot be cancelled except upon terms that will compensate against loss.

2. Experimental work performed at customer's request, such as sketches, drawings, composition, plates (including lithographic plates), presswork, and materials shall be charged for at current rates.

3. Sketches, copy, dummies and all preparatory work created or furnished by the printer shall remain his exclusive property and no use of same shall be made, nor may ideas obtained therefrom be used, except upon compensation to be determined by the owner.

4. Art work, type, plates (including lithographic plates), engravings, electrotypes, negatives, positives, and other items when supplied by the printer shall remain his exclusive property unless otherwise agreed in writing.

5. Alterations: Proposals are only for work according to the original specifications. If through customer's error, or change of mind, work has to be done a second time or more, such extra work will carry an additional charge, at current rates for the work performed.

6. Standing type matter, plates (including lithographic plates), and negatives will not be held after completion of the order except by special agreement with customer and a special charge therefor.

7. Proofs: Two proofs shall be submitted with original copy. Corrections, if any, to be made thereon and to be returned marked "O.K." or "K. with corrections" and signed with name or initials of person duly authorized to pass on same. If revised proofs are desired, request must be made when proof is returned. Printer is not responsible for errors if the work is printed as it was approved by the customer.

8. Press proofs: An extra charge will be made for press proofs, unless the customer is present when the form is made ready on the press, so that no press time is lost. Presses standing awaiting O.K. of customer will be charged at current rates for the time so consumed.

9. Overruns or underruns: Not to exceed 10 per cent of the amount ordered shall constitute an acceptable delivery, and the excess or deficiency shall be charged or credited to the customer proportionately.

10. Customer's property: The printer shall charge the customer, at current rates, for handling and storing customer's stock or customer's printed matter held more than 30 days. All customer's property that is stored with the printer is at the customer's risk, and the printer is not liable for any loss or damage thereto caused by fire, water leakage, theft, negligence, insects, rodents or any cause beyond the printer's control. It is understood that the gratuitous storage of customer's property is solely for the benefit of the customer.

11. Delivery: Unless otherwise specified, the price quoted is for a single shipment, *F.O.B.* customer's local place of business. All proposals are based on continuous and uninterrupted delivery of complete order, unless specifications distinctly state otherwise.

12. Terms: Net cash thirty (30) days. All claims must be made within five days of receipt of goods by customer.

13. Delays in delivery: All contracts are made contingent upon wars, strikes, fires, floods, accidents, or other contingencies beyond the printer's control.

14. Repairs, changes, trimming, mortising, anchoring, special proving, or similar work required on materials which are furnished by the customer, including, but not limited to, drawings, engravings, electrotypes, and negatives, shall be billed at current market rates.

15. Paper stock furnished: Paper furnished by the customer shall be properly packed, free from dirt, grit, torn sheets, bad splices, etc., and of proper quality of printing requirements. Additional cost due delays or impaired production on account of improper packing or quality shall be charged to the customer.

16. Color proofing: Because of the difference in equipment and conditions between the color proofing and the pressroom operation, a reasonable variation in color between color proofs and the completed job shall constitute an acceptable delivery.

Uniform conditions of sale

1. Terms: Cash at seller's home office, net ten days E.O.M. (end of month) or 30 days net. No discount for anticipation.

2. All goods are sold *F.O.B.* point of manufacture. Delivery to common carrier shall constitute delivery.

3. Each item specified shall be deemed an independent contract; but in case of default in any payment on this and/or any other order, the entire purchase price hereunder shall immediately become due and payable.

4. The buyer agrees to reimburse the seller on demand for any Federal or state sales tax or similar tax or additional expense caused by or the result of Governmental action which the seller may be required to pay by reason of the execution of this contract.

5. All orders and contracts are subject to acceptance by an authorized executive of the company.

6. The buyer agrees to pay any additional expenses caused by changes ordered by him after he has approved sketch or copy.

7. All art work, drawings, negatives, engravings, stones, plates, dies, and other special equipment not specifically charged for in full are the property of the seller. Seller agrees to use them only on work authorized by the buyer.

8. A variation of not more than 10 per cent over or under the quantity specified shall be considered a compliance with the order and overruns or shortages shall be charged or allowed for at the rate for the specified quantity, provided that where orders require the special manufacture of paper, variation in quantity specified shall be charged or allowed for in accordance with the trade customs of the paper industry.

9. Goods shall be invoiced on completion and, if stored, the buyer shall pay a storage charge of 1 per cent a month.

10. An extra charge for special packing and shipping shall be made.

11. Seller shall not be liable for any default or delay in performance caused wholly or partly (1) by strikes, fires, floods, accidents, shortage of labor, or materials; (2) by any cause not included in the foregoing which is beyond control of seller; (3) by any control, orders, or restrictions made by any governmental authority affecting the manufacture or delivery of the goods, or of any commodity essential to their manufacture or delivery.

12. The buyer shall be exclusively responsible for, and shall indemnify the seller against, liability for all claims made by reason of the use of any words, devices, or designs upon the goods, notwithstanding that the seller may have been consulted thereon.

13. Any controversy or claim arising out of or relating to this contract or the breach thereof, shall be settled by arbitration, in accordance with the rules, then obtaining, of the American Arbitration Association, and judgment upon the award rendered may be entered in the highest court of the forum, state or Federal, having jurisdiction.

Electrotype trade customs

Prices, quotations, and conditions of acceptance:

1. Prices: Prices are subject to change without notice.

2. Quotations: All quotations are subject to acceptance within 10 days. Until acceptance is received, the quotation is subject to change without notice.

3. Cancellations: Orders regularly entered cannot be cancelled except upon terms that will compensate the electrotyper against loss. The electrotyper may cancel any order without liability.

4. Overtime: All work required to be done outside of regular working hours will be charged at overtime rates in addition to the regular charge for work.

5. Mold and return: If type forms or originals are withdrawn before the completion of the work, no responsibility will be assumed.

6. Delayed completion of orders: If work on orders or contracts is delayed by the customer beyond a reasonable time necessary to complete the work, it is to be billed at a price to meet existing conditions at the time the work is charged, regardless of estimate, unless this point is specifically covered in the quotation.

7. Contingencies: All agreements are made and all orders accepted contingent upon delays by strikes, fire, accidents, unusual market or labor conditions, or causes beyond our control.

Extra charges

8. Mold and return: When forms or originals are withdrawn before completion of work, an extra charge will be made.

9. Portions of plates: Large form or plate from which a portion only is wanted. The plate made therefrom will be valued on a basis of one inch extra on all four sides.

10. Repair jobs: No repairs to cuts or forms will be made, nor rules repaired or joined unless especially ordered by customer. When such work is ordered, a properly marked proof should accompany the order, calling the electrotyper's attention to all repairs to be made—an extra charge is made for such work.

11. Locking up: It is expected that type forms will be locked up in chases with bearers. If type is not in chase, a locking-up charge will be made, and no responsibility will be assumed for slipping or the justification of the matter. If by reason of soft wood, low quads and

Fine Printing CAN MAKE YOUR Annual Report DO A MORE EFFECTIVE *PR' Job



Naturally, you want your annual report to do more than simply state your corporation's financial position. You want this yearly message to present the complete story of your company's accomplishments and future plans, in such a way that it will build confidence in the minds of your stockholders, your employees and the public.

In short, you want your annual report to do a bang-up public relations job. There's no PR tool that's more effective.

But to do this successfully, your annual report must look the part. For after all, many readers gain their first impression of your corporation from the appearance of this one printed piece. That's why it's so important to insist on the finest printing you can get.

Here at Lind Brothers we are fully staffed and equipped to give you the same service in planning, layout, artwork and fine printing that has helped other clients of ours to win many "Oscars of Industry" in past years. Fine Printing in the Lind tradition can help your firm to win this honor — and to win commendation from your stockholders and the public. May we send a representative to call?

* Public Relations

Lind Brothers

PUBLIC RELATIONS PRINTERS

309 Lafayette St., New York 12, N. Y. WAlker 5-1837—1838—1839—1840

furniture, or similar reasons it is necessary to mold cuts separately from type, or mount cuts on metal, an extra charge will be made.

12. Special plate work: Complicated building out, routing and registering color plates, furnishing plate proofs, anchoring plates to wood blocks, etc., charged as time work.

13. Curved plates: All plates over .250 inch thickness add 5 per cent of Column A (line-type copper unmounted rate) for each additional .030 inch in thickness. Non-stretch curved plate additional charge.

14. Chases: A charge will be made for all chases. This charge will be credited on their return.

Order requirements

15. Proofs: Proofs and written instructions are required with all orders.

16. Verbal instructions: Telephone or other verbal instructions dealing with orders in process must be followed up with written instructions, otherwise the electrotyper will not be responsible for errors.

17. Identification: All forms should have owner's name set up in the form, or stamped on the chase or furniture, to insure identification. Lack of such identification releases the electrotyper from any responsibility for loss of form.

18. Delivery: Responsibility for deliveries by mail, express, freight or messenger ceases when goods are handed to the carrier.

Production conditions

19. Separate lock-up: Two or more jobs in a chase will be charged separately. Jobs requiring a different number of molds should be locked in separate chases. Imposing type and other changes are subject to a time charge, and no responsibility will be assumed for this work. Proposals are based on continuous and uninterrupted delivery of complete orders.

20. Register: The electrotyper does not guarantee register, nor does he assume any responsibility for press spoilage or rejections. Color plates should be proved immediately on receipt from electrotyper, and if register is not satisfactory, the matter should be taken up with the electrotyper before plates are started on press run. No responsibility assumed by electrotyper when customer or printer tools or cuts an electrotype in any attempt to correct register.

21. High spaces and quads: It is requested that all type forms for electrotyping be locked up with high spaces and quads, as it is only possible to obtain first-class molds from such forms.

22. Curved plates: Standard thickness .187 inch. Curved plates of standard thickness stretch in the direction of the curve about $\frac{1}{8}$ inch in 10 inches. Orders for curved plates must be accompanied by marked proofs showing direction of curving, diameter of printing cylinder, thickness of plates desired.

23. Multigraph plates: Marked proof should accompany form showing direction of curve (top to bottom or side to side). State whether band plate or lug plate is wanted, also whether for Junior or Senior Multigraph.

24. Standard gauge and bevel: Unmounted job, book, and catalog electrotypes will be made .152 inch thickness, unless otherwise ordered. Newspaper electrotypes will be made .105 inch thickness. Twenty degrees is the standard bevel.

25. Beveled rules: To secure best results, use brass rules beveled from both sides, avoid rules with no bevels or beveled on one side only. Rules should be .002 lower than type matter. Rules of one point or less in thickness, unless beveled both sides, are not practical for electrotyping purposes. Failure to comply with the above frequently necessitates the making over of orders with consequent loss of time.

26. Standard for engravings: All cuts or engravings locked up in type forms must be type high. All engravings and etchings should be carefully routed and trimmed out by the engraver to insure sharp, clean electros. Electrotyping is a duplicating process; good electros cannot be made from engravings with ragged edges or high shoulders; the electrotyper assumes no responsibility due to imperfect originals. On plates requiring extra tooling and trimming, an extra time charge will be made. It is required all halftones be etched to the photo-engraver's accepted scale of standard depths in producing halftone plates.

27. Lead molds: Lead mold duplicates are made from unmounted copper originals. To secure the best results, bearer and dead metal should be left on all engravings and all originals delivered unmounted. They must be left in one piece to keep position and register, if furnished otherwise it is at customer's risk. Color originals made in pieces in many cases cannot be lead-molded, as register is destroyed in lifting from the blocks by electrotyper to lead mold. Originals filled in with solder on printing surface cannot be lead molded, as soldered portions will not stand the pressure of molding in lead. Strapping of originals to maintain register will be charged extra.

28. Press waiting: Under no conditions or circumstances will any responsibility be assumed for holding press.

Checking on delivery

29. Examination on delivery: All plates should be examined on delivery, and proofs made and read, and if not correct and satisfactory, returned immediately, as the electrotyper assumes no responsibility other than the making over of the plate. All claims for shortage, missing originals, or forms must be made not later than 48 hours after order is delivered. The electrotyper's responsibility ceases immediately if plates are trimmed, repaired, or patched by anyone not in the electrotyper's employ.

30. Customer's property: Not responsible for loss of original patterns, forms, engravings, or finished work, in the event of fire, theft, or from other causes while in our possession.

31. Soldering: While every care possible will be taken in soldering plates together, and in anchoring them to bases, no responsibility will be assumed for plates breaking apart on press, or for anchors breaking loose.

32. Wood cuts: Wood cuts or wood type breaking or separating in molding or warping in our possession is at customer's risk.

33. Orders for electros on material under ceiling prices must be designated.

34. Stenographic errors: Stenographic or clerical errors are subject to correction.



Philatelic Title Page for Airmails of the World

Artist—Arthur Szyk, New Canaan, Conn. • *Published by* Kasimir Bileski, Winnipeg, Canada

Produced by D'Arcy Printing & Lithographing Corporation, New York

ARTHUR SZYK internationally famous artist is the world's greatest creator of illuminated art. Some of his work is almost priceless. A reproduction of one of his illuminations appears on the reverse side of this insert.



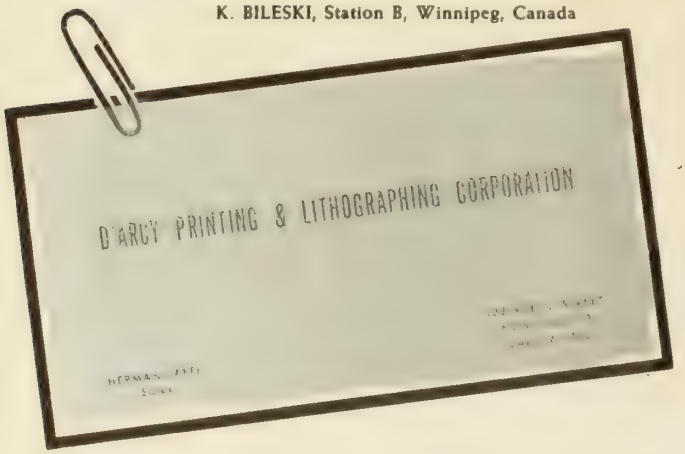
The seven subjects featured are the first of a series of 57 full-color United Nations Philatelic Title Pages.

THOMAS CRAVEN
acknowledged dean of American Art Critics, says:

> *"In this instance, the foremost miniature painter of modern times has devoted his skill as a designer to a remarkable project. The results are title pages of extraordinary charm. The entire series of paintings are not only unique in this field, but they also capture the particular spirit of the various countries represented."*

These magnificent reproductions of Arthur Szyk's technique are worthy of a place in any philatelic collection. They are sold and distributed at a cost of $10.00 for the set of 7 subjects, available from the publisher:

K. BILESKI, Station B, Winnipeg, Canada



Why not call us in on your next important printing or lithographing job? You'll be pleasantly surprised at the modesty and fairness of our estimate-proposals.

MASTERPIECES OF REPRODUCTION

The highest skills of graphic arts craftsmen were engaged by us to achieve the most faithful reproductions of these famous Szyk originals. Skill born of serving many of the nation's largest advertisers, painstaking attention to minute details, years of 'know-how' on intricate jobs where special effects are required—these talents are available for you and your clients in this quality workshop completely equipped with every modern mechanical facility.

UNITED NATIONS PHILATELIC TITLE PAGES

Kasimir Bileski, internationally known stamp dealer of Canada, has entered into a contract with Arthur Szyk, the famous illuminationist, to do a "concept of a country" for each of the United Nations. We of D'Arcy Printing and Lithographing, have been commissioned to produce these in full color, and in volume sufficient to take care of the extraordinary demand for these masterpieces.

Aniline printing

Odorless inks suitable to food-wrap jobs and a variety of other applications; development of dyestuff, pigment, water-type inks traced

James J. Deeney

Aniline printing is so called because dyestuff inks that dry immediately were first used in this method of printing. Some modern aniline inks contain no aniline dyes at all.

Converters of paper bags were the first in the United States to adopt the aniline printing process, approximately 20 years ago. Not only the small investment of capital for equipment, but especially the fact that paper stocks such as kraft, sulphite, etc., could be printed with these immediate-drying inks and converted into other forms such as bags and envelopes in one continuous operation, afforded great economies.

The printing at that time was of rather poor quality, and the aniline process was referred to as "mechanical rubber stamp printing." However, in the paper bag industry, the maintaining of production schedules was very important, while the quality of printing was only a secondary consideration.

Most converters made their own inks, which usually consisted of a spirit soluble dye that was dissolved in alcohol with the aid of acetic acid, with shellac added as a binder. The inks gave very poor printing results, were fugitive to light, bled more or less in water, and seeded in the fountain or in storage. In many instances, far more ink was discarded, because it went bad, than was actually used to print the job.

Cellophane printing

With the introduction in 1930 of cellophane to the packaging field, many difficulties were encountered printing this type of product with oil ink, and slip-sheeting was necessary to prevent offset. Converters of cellophane envelopes and bags, however, found that many of the printing troubles, as well as the slip-sheeting, could be eliminated by using aniline inks. They also found that they could print cellophane from the roll and convert it into bags and envelopes in one operation. The next step was printing from roll to roll and subsequently sheeting. The results proved excellent.

Dyestuff inks, which are transparent, are not entirely satisfactory for printing cellophane as this film is transparent and good contrasts are not obtained. Again, good register must be maintained, for where the dyestuff inks overlap, a change in color occurs. Before good printing results could be obtained on cellophane, therefore, opaque aniline inks had to be developed.

The first marketable opaque aniline ink, a white ink made from pure titanium dioxide—the most opaque white pigment made even today—not only revolutionized aniline printing on cellophane, but also eliminated the necessity for close register work by converters printing paper stocks.

Not only was it possible to use this white ink as a first color and overprint with dyestuff inks but small amounts of the white ink could be added to the dyestuff inks to make them sufficiently opaque so that they could overprint one another without change in color.

Dyestuff and pigment inks

The first colored pigment inks developed were primrose yellow and chrome yellow. With the development of a new orange pigment, molybdate orange, a pigment orange and a pigment aniline red ink were produced. Blues, greens, purples, and black, all 100 per cent pigment inks, quickly followed. In 1934, the writer developed the first silver and gold inks printed by the aniline process.

Aniline inks are offered to the trade as 100 per cent dyestuff inks, 100 per cent pigment inks, and as semi-opaque inks. Semi-opaque inks consist of mixtures of the first two kinds, the pigment portion being matched very closely to the shade of the dyestuff portion.

Dyestuff inks will always play a very important part in aniline printing. These inks consist of a dyestuff, or a mixture of dyestuffs, combined with the proper fixing agent, dissolved in a suitable spirit varnish. They can be made from basic dyes, acid dyes, and other classes of dyestuff, provided they have good solubility in alcohol, and can be treated with a fixing agent that prevents the dyestuffs from bleeding in water.

Dyestuff inks as furnished by the ink maker are usually of moderate fastness to light. However, many special types of dyestuff inks are offered that have excellent resistance to light.

Pigment ink advantages

The 100 per cent pigment inks, though not giving as good mileage as the dyestuff inks, offer many advantages:

1. Fastness to light, with maximum permanency, even in tints, pastel shades.
2. Fastness to moisture, food fats, hot paraffine; therefore, the safe inks for food packaging.
3. Non-bleeding in cellophane- or paper-adhesives.
4. Unusual hiding power. High opacity coupled with good covering. Oil color effects instead of dye stain look.
5. Freedom from settling: keeping the same color throughout the run.
6. Good adhesion, giving elastic films on special stocks, even if aged.
7. Excellent working features. Pigment is dispersed in a well-balanced vehicle that gives good flow and leveling; clean-working properties with freedom from frequent wash-up.
8. Economy.

Some of the factors that influence aniline printing, for which allowances must be made in the inks, are:

1. Type of stock being printed; that is, whether it is absorbent, like kraft or sulphite, or non-absorbent, like cellophane or aluminum foil.
2. Speed of the press—the number of feet per minute the web is printed.
3. Distance between colors.
4. Types of heat and method of its application.

Specific types of aniline ink are required for various stocks. Kraft, sulphite, and other absorbent stocks require a much slower drying ink and an ink with a lower resin content than inks used to print transparent films and metallic stocks. Transparent films and

metallic stocks also require different types of resins to get good adhesion. Resins must be chosen that have chemical affinity as well as mechanical affinity for the stock.

Printing speeds vary from 100 to 1,000 feet a minute, depending upon the nature of the job. Makeready is very simple and rapid, but wherever possible it would be desirable to employ pre-makeready techniques in the manufacture of the rubber plates. While synthetic plates of plastic can also be used at present, the bulk of aniline printing still employs rubber plates.

The newer plastic plates take a finer screen than will rubber plates, but at present the aniline printers prefer the printing surface of the rubber plate. Also, screen fineness is to some extent held down by the liquid inks, which tend to create a filled-in effect if too fine a screen is employed. The present recommended screen is 65-75 lines. In test runs, under ideal conditions, finer screens have been successfully employed.

Register of multi-color copy has been a problem but improved equipment has made more perfect register possible than heretofore.

The aniline press is of very simple design. The printing elements consist essentially of a fountain roller, a transfer roller, a plate cylinder on which is mounted the molded rubber plates, and an impression cylinder.

The fountain roller is made of metal or rubber, while the transfer roller is always made of rubber of 70 to 80 durometer hardness. The impression cylinder is usually made of steel.

The fountain roller revolves in the liquid aniline ink, and by the simple method of "squeeze" the ink is distributed on the transfer roller. The inked transfer roller is brought in contact with the plate, and printing is done using a very light or "kiss" impression.

New developments, uses

Recently, another method of ink distribution has been introduced. In this method, a knurled cylinder is used in the fountain, and a rubber doctor blade, held in place by spring tension, is used to remove the excess ink. The knurled cylinder, which has been inked, makes direct contact with the plate.

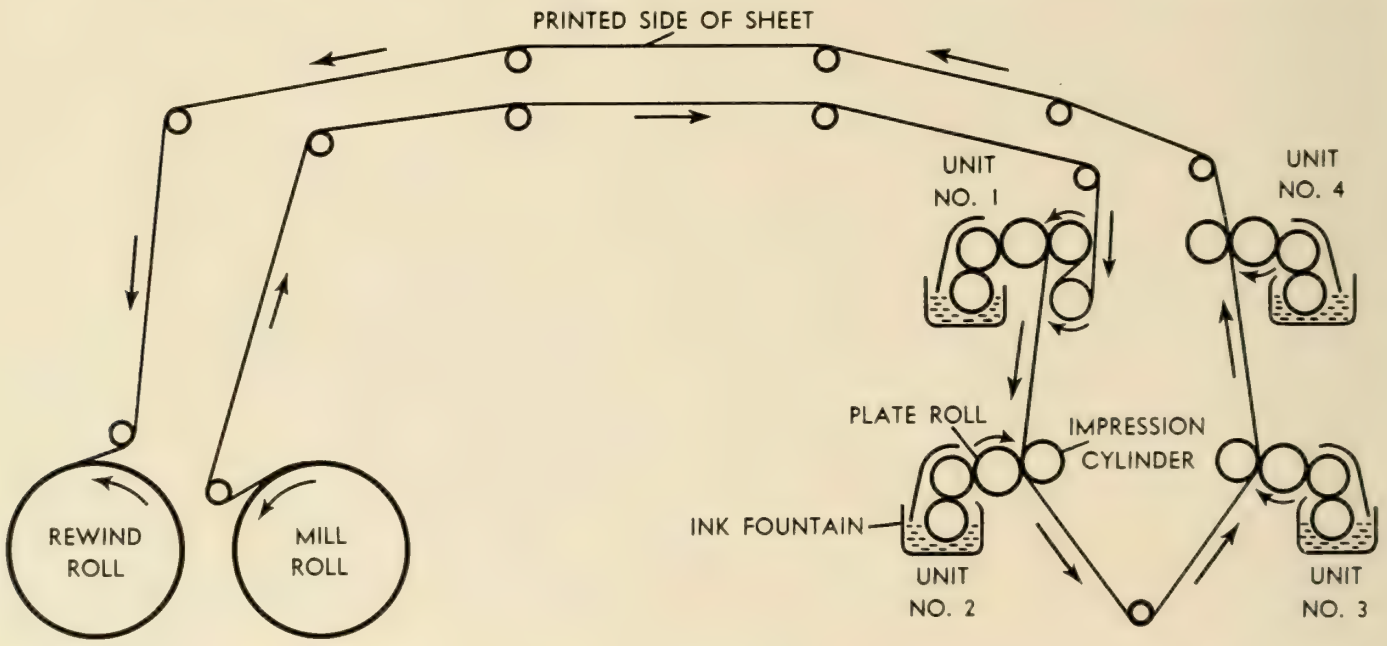
During the last ten years aniline printing has become very popular. Improvement in aniline presses, molded rubber plates, and research in aniline inks have all contributed toward the great advance in quality that has been made.

There is no question but that aniline printing will widen its field of application. All-over solid and design printing can be done by this method and the quick drying nature of aniline inks makes it possible to do many jobs that cannot be done economically by other processes.

Aniline printing is mainly used for printing on cellophane and other transparent films and for printing on food wraps and containers, fancy box papers and fancy Christmas and holiday wrappings. Aniline inks are odorless and therefore are particularly suitable for coffee and tea bags, and other food containers. The process can also be used for such jobs as posters, pamphlets, letterheads, blanks, bills, sales checks, and fabrics.

Wraps or containers for spices or any other product containing highly volatile oils should not be printed by the aniline process, as the vapors from such products act as a solvent for aniline ink and cause it to loosen up.

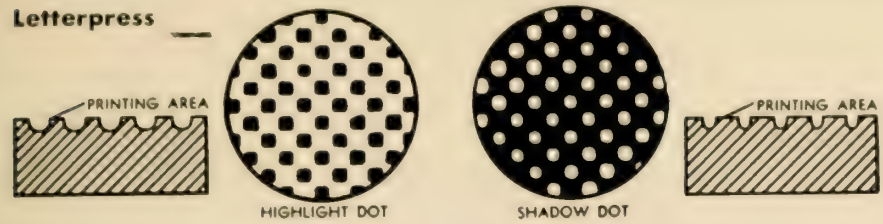
Recently, a semi-water type of aniline ink has been developed for printing various types of paper. These inks give beautiful water color effects, and since they can be thinned with water and the press washed up with water, they are very economical to use. Still newer vehicles for aniline inks will be developed and in the future, new inks will be evolved to withstand many of the conditions which are now preventing or limiting the use of this economical product.



Aniline printing press: Typical aniline rotary press can print four impressions at from 400-800 feet per minute. Only one ink fountain roll of brass or rubber and one rubber transfer roller are required. For further details, see chart of Printing Press Specifications and the Cross-Reference Index.

Process Visualizer

Letterpress

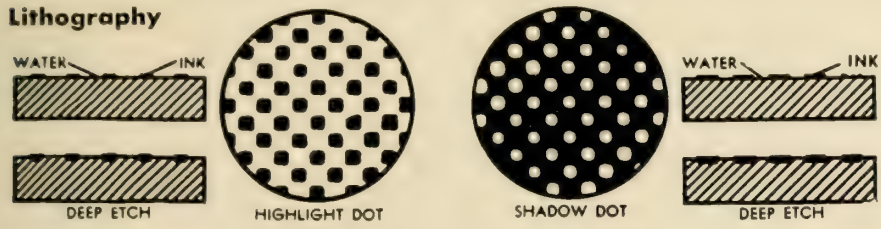


High (relief) portions of plate receive ink and print. All etched areas between dots are not of same depth in plate. Different parts of copy receive deeper or shallower etch, depending upon size of areas. The longer the etching is prolonged, the smaller the dots become, making printing area lighter, gradually reducing both the tone and the detail.

However, long, deep etching is required when duplicate plates, such as electros, stereos, or mats are to be made, as each of these steps involves a loss in depth; therefore, extra depth is required in the original. Tones are created by size of dots—relationship of black area to white. There are same number of dots per square inch in shadow and highlight areas, but larger dots in shadow portion cause larger proportion of that plate area to accept ink and to print.

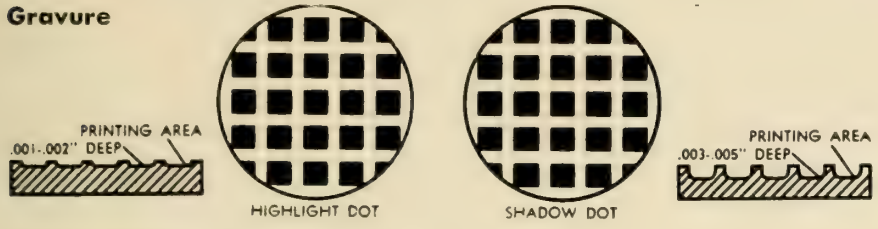
Fineness of screen in no way affects tone. Screen fineness in photo-engraving simply affects detail. The finer the screen, the better the detail reproduced, and the less visible the screen in the reproduction. Tone in a 65-line screen would have fewer but larger dots than corresponding tone in a 133-line screen. Different tones in same screen have same number, but different sized, dots. Dots also vary in shape, and critical detail depends on their correct shape.

Lithography



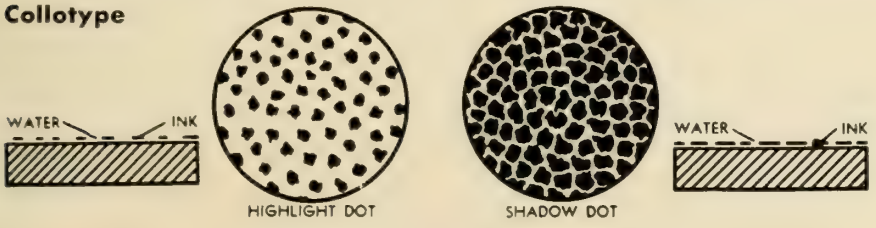
Printing is from flat surface, which is chemically sensitized so that after photographic printing, part will accept water, repel ink; part will repel water, accept ink. Apparent relief on plate surface is infinitesimal and is to give plate sufficient surface tension to hold water or ink. In deep etch work, printing surface is slightly intaglio—.001"-.003" Principle of dot size, shape, number per square inch, and screen as in letterpress. Deep etch lithography, in effect, is almost as deep as gravure plate, but requires no wiping or scraping with doctor blade, as water between dots effectively rejects ink. Depth of etch gives each dot more intensity, but tone variations are controlled by dot sizes.

Gravure



Lowered portions (wells) of plate hold ink and print. Dots in conventional gravure are of same size, shape, and number per square inch in highlight and shadow areas. Tone is controlled by varying well depths. Deeper wells in shadow areas hold more ink, print more darkly. Gravure uses finer screen than letterpress; therefore, screen pattern is less obvious. Tendency of ink to spread on further obliterates screen, blends tones. Excess ink is scraped off by doctor blade. In Dultgen-News Halftone Method, special reverse halftone screened positive is printed on carbon tissue and tone is controlled both by the depth of the ink wells, as well as by the size of the tone dots themselves.

Collotype



Employs no screen. Gelatin colloids form only pattern in the reproduction, a fine, almost invisible grain. As in lithography, plate is practically plane surface, printing areas being ink-receptive, nonprinting areas being ink-repellent. Collotype grain being present in like degree over all, there are no extreme distinctions between tone areas. Both water and ink rollers are used. Chemical treatment of gelatin, plus effect upon it of light used in photographic printing, creates varying degrees of hardness in it. Where extremely hard, gelatin film will reject water, accept ink; where extremely soft, it will accept water, which rejects ink. Varying degrees of hardness between these extremes cause corresponding variations in amount of water or ink that is accepted or repelled by the plate.

Gravure process

Basic data on how the process operates and best kinds of art and type to use; technical developments in paper, ink, plates, and presses reviewed

V. Winfield Challenger

Gravure, known also as intaglio, is a method that prints the portion of the plate that is etched in little wells below the surface of the plate, as opposed to letterpress, which prints the portion of the type or plate above the surface.

As in letterpress printing, there are the same number of dots per square inch in all areas of the halftone illustration. Unlike letterpress, however, even the line copy is screened. While in letterpress or lithography, the size and shape of the dot control the gradation of the tone and detail of the copy, in conventional gravure all dots are uniform in size and uniformly square in shape. The tone and detail gradations are controlled by varying the depth of the square wells, which hold more or less ink, depending on the depth.

Gravure is used extensively in the rotogravure and in other special sections of the Sunday newspapers. Its use in magazine printing has increased greatly recently, and more than half a hundred well-known magazines now are printed wholly or in part by this process.

In addition, gravure has been used for many years for printing various types of merchandise and such other materials as wallpaper, calico, textiles, silks, wrapping paper, oilcloth, linoleum, labels, box covers, cellophane, glassine, and tissue. It also is used for books, calendars, greeting cards, catalogs, direct-mail advertising pieces, and for the printing of art subjects and photographs that have a great range of tone gradation.

Kinds of gravure

Gravure can be either sheet-fed or roll-fed. Sheet-fed gravure, also known as photogravure, is a slower process usually employed for short runs where high quality and art effects are desired. By using special papers, a good gravure house can reproduce in beautiful and faithful detail a great range of tone values.

Roll-fed gravure, usually known as rotogravure, is printed on a rotary press from a roll of paper, and is used primarily for long-run, high-speed work. Considering the speed of the process, and the fact that it often employs an inexpensive grade of paper, excellent pictorial results are obtained in both single and full color.

Illustrations suited to gravure

Paintings, etchings, photographs—both black-and-white and color—or any good art work can be reproduced by gravure.

Photographic prints should be soft and full-toned rather than brilliant and "contrasty." This is because, in producing a gravure plate, a continuous tone negative is made in the camera, retouched, and a positive is then made. During those two operations, there is a slight reduction at both ends of the photographic scale in which the highlight detail in a "contrasty" print becomes bleached and the shadow tones tend to thicken, with a resulting loss of detail. In spite of this reduction, however, detail can be held in a softer print by judicious retouching on the negative and positive.

Etchings present no serious problems, require no preparation, and can be reproduced virtually in facsimile. Wash drawings are highly satisfactory. Pencil and crayon sketches can be made to produce beautiful results.

Line work, such as ink sketches, graphs, diagrams, etc., is readily reproduced when the reduction in size is not too great. As the gravure screen is used on all line work, as well as on all other types of illustrations, fine sketch lines are likely to be broken up if they are reduced too much.

Hints about type

Type matter, although screened, reproduces satisfactorily. Admittedly, it is not as sharp under a glass as type produced by letterpress, yet it is perfectly readable.

When there is to be no reduction or enlargement in the size of type, it is easily handled for reproduction by pulling good proofs on a translucent paper and dusting with a fine lampblack to obtain the desired opacity. This is used as a direct positive. When type matter is to be enlarged or reduced, it must be photographed as a line drawing.

Because of the screening, light faced types in the smaller sizes—especially 6-point—as well as italics should be avoided in gravure work. Some light faces, such as Caslon Old Style, Garamond Old Style, and those with hairlines, can be used successfully if handled with discretion.

Type faces admirably suited to gravure reproduction are those that have even weight strokes, such as the san serif Gothic, Futura, Spartan, and the Kabels—and those with flat serifs: Beton, Girder, and Tower. Other type families that can be used successfully are Century, Bookman, Baskerville, New Caslon, Kennerley, Goudy Bold, Garamond Bold, and Bodoni Bold.

Screening necessary

The screen used in gravure is cross-ruled and may be as fine as 200 lines, although the usual gravure screen has 150 lines to the inch, producing 22,500 cells to the square inch, scarcely visible to the naked eye. This is because the lines separating the cells are so thin that the ink in one cell virtually touches the ink in the surrounding cells.

Furthermore, the ink coverage — depending on the absorbency of the material that receives the impression— tends to fuse and obliterate the screen pattern.

Gravure printing requires that everything that is to be printed—photographs, wash drawings, oil paintings, line drawings, hand lettering, and type—be screened. In other printing processes, only those pieces of copy that have gradation of tone require a screen.

While each type of gravure differs slightly from the others, they all move along virtually the same routine. Herewith is the procedure through which a typical piece of work goes in conven-

THERE are many different printing processes, producing a wide variety of results, but our efforts are wholly devoted to but one—*photogravure.*

This concentration of efforts in the one medium, coupled with our unique experience in employing the original, hand-printed grain plate method with its rich heritage and tradition of quality, enables us to offer what we consider to be the best reproduction in sheet-fed photogravure for book and advertising illustration.

The illustrations shown in the following pages, through the courtesy of Mr. Samuel Chamberlain, demonstrate our use of sheet-fed photogravure in the reproduction of a drypoint etching, a photograph, and a pencil drawing.

The reproductions speak for themselves, but at the risk of the accusation of being prejudiced witnesses, we believe that the reproductions, especially of the photograph, testify to the superiority of photogravure (and our use of the process) for brilliancy and the rendition of tone gradation which can be achieved by no other printing method.

We would appreciate the opportunity of showing you other examples of our craftsmanship — ones perhaps more in your field of interest.

PHOTOGRAVURE AND COLOR COMPANY

207 WEST 25TH STREET, NEW YORK 1, N. Y.

Telephone: Watkins 4-4840



THE APOTHECARY'S SHOP, WILLIAMSBURG, VIRGINIA

From a drypoint etching by Samuel Chamberlain

PHOTOGRAVURE AND COLOR COMPANY



THE MANSION, MOUNT VERNON, VIRGINIA

From a photograph by Samuel Chamberlain

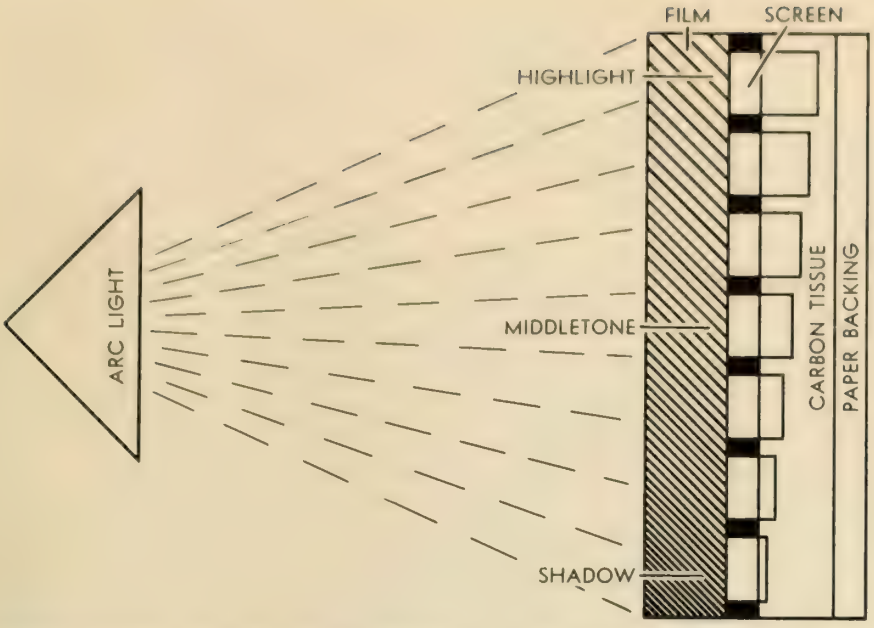
PHOTOGRAVURE AND COLOR COMPANY

PHOTOGRAVURE AND COLOR COMPANY



THE CAPITOL, WILLIAMSBURG, VIRGINIA

From a pencil drawing by Samuel Chamberlain



Exposing: Positives made from retouched negatives are brought into contact with gelatin-sensitized carbon tissue that was previously printed with gravure screen, and printed photographically.

tional gravure—used in newspaper printing—from the time the copy is received at the plant until the press starts to roll. For sheet-fed gravure the steps are essentially identical, except that flat copper plates are used instead of copper cylinders.

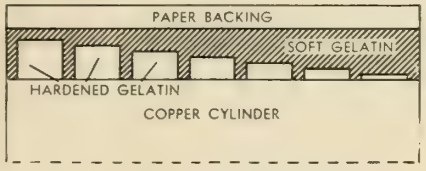
All art work is carefully examined for its suitability from the standpoint of size and quality. The art is placed before a camera and a continuous tone negative is made in the size to be printed. The negative is retouched to sharpen highlights, put detail in the shadows, and to fix photographic defects.

Type is photographed from proofs that have been pulled on coated stock. The negative of this type matter is made on either film or wet plate. The retouched negative of the art work and the negative of the type matter are then set up in proper position and a single positive is made.

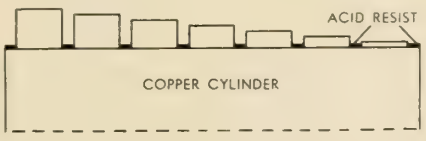
Tone values are retouched in positive. Light tones which may have been lost, and shadow blacks, are strengthened.

A sheet of carbon tissue (pigmented gelatin) then is photographically printed by contact with a gravure screen. This is the first time that a screen is introduced. With the News-Dultgen Halftone Intaglio Process, the Intaprint method, and with others where a halftone screen is used, the procedure differs.

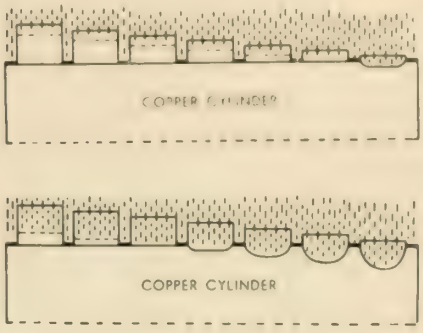
The positive containing the complete page of pictures and type is then printed on the sheet of screened carbon tissue that has a gelatine-sensitized coating that hardens in proportion to the amount of light that passes through the positive. In highlight areas, gelatin is hardened to the greatest degree, in middletone areas, to a lesser degree, and in shadow areas to the least degree. Where screen lines are present on the sheet, the gelatin is hardened to the greatest degree.



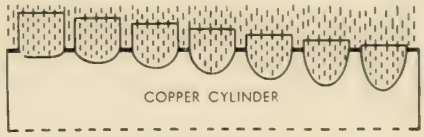
The cylinder on which the etching is to be done is faced with copper that has been deposited electrolytically. The copper facing has been ground and carefully polished to produce a perfectly smooth surface. The exposed carbon tissue containing the complete page—type and illustration plus the screening—is carefully laid down on the cylinder in the proper position. With water and a squeegee roller, it is made to adhere to the copper cylinder and then developed.



The backing and soft gelatin next are washed off. The developed image now consists of squares of gelatin of varying heights. Nonprinting areas are painted with asphaltum, an acid resistant. To achieve better control of the etching, the type, rules, and other specific parts may be painted out and etched separately from the other work on the illustration.



In the next two steps, the acid penetrates the printing areas and the gelatin film before reaching the plate surface. The hardened areas of the carbon tissue resist the etching solution. The shadows are the first to be etched, then the middletones, and last of all, the highlights.



Finally, the etching process involves weakening the solution gradually so that the lighter areas receive an etch that is both weaker and shorter in duration.

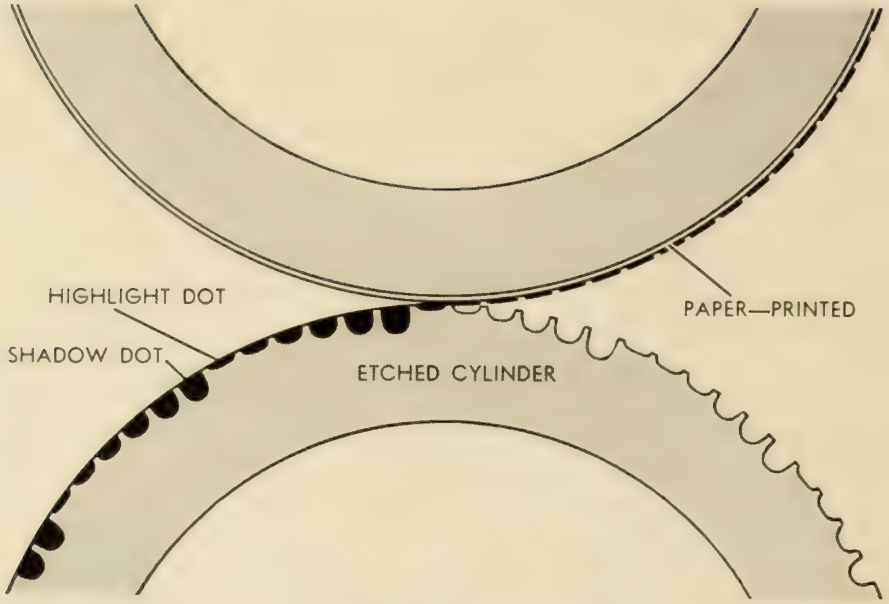


With the etching completed, the copper cylinder contains a meshwork of cells that is intaglio; that is, below the surface. In conventional gravure, the cells are of varying depths, but are of the same size and shape. The varying depth controls the tone for printing.

The above illustrations are on a scale of approximately 3½ dots per lineal inch. Actually, in a 150-line screen, there are 150 dots per lineal inch, or 22,500 per square inch.

After etching, the cylinder is ready to be put on the press for proofing. A first proof is run off, critically examined, compared with the original copy, and all necessary corrections and desired revisions are indicated.

These are made in the cylinder—either by buffing to reduce color, or by re-etching to strengthen color, or by ad-



Cylinder detail: In gravure, all dots have same surface area. Tone gradation is controlled by varying depths of ink wells. Deeper wells hold more ink, print dark area. Finer screen plus tendency of ink to spread on surface, making dots blend, almost obliterates the screen pattern.

ditional hand engraving to correct defects. While defects in the cylinder can be corrected, extensive alterations such as the substitution of new text or a new illustration cannot be made without starting afresh—making new negatives, new positives, and etching a new cylinder.

In conventional gravure, all dots are of the same surface size and shape. Gradation of tone is controlled by varying the depths of the ink wells. Deeper wells contain more ink, and therefore print darkly; the shallow wells carry less ink and print lighter tones.

Usually, the screen for gravure is finer than for letterpress. This, plus the fact that in gravure the ink tends to spread on the surface, makes the dots almost blend into each other, causing the gravure screen pattern to be obliterated.

The cylinder now is put on the high-speed press to print the edition. The number of cylinders required is determined by the number of pages and different colors that will be used.

Printing

The web or sheets go through the press between the impression and plate cylinders. An extremely fast-drying ink is in an enclosed fountain through which the plate cylinder revolves. The ink is forced through nozzles under high pressure onto the printing cylinder at a point immediately after the previous impression, thus completely refilling the ink wells.

A doctor blade wipes the excess ink from the plate cylinder, which then comes into contact with the paper under pressure that draws the ink out of all the etched wells.

First copies are again compared with the original art work. Now that the cylinder is on a high-speed press, additional corrections or revisions may be necessary to improve the printed result. These are made by etching, buffing, etc.

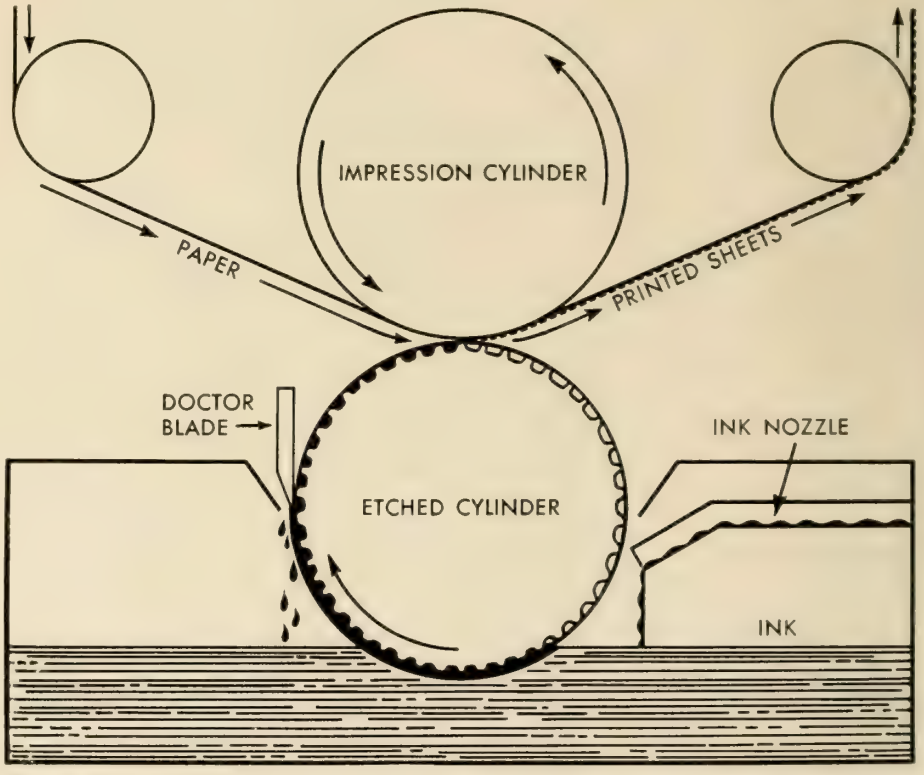
Cells are the key

The press then is started, and printed copies are produced at speeds of 500 to 20,000 cylinder revolutions an hour.

It is the ink-filled cells, coming into contact with the paper, that produce the printed result. The actual transfer is brought about by pressure on the paper so that the ink is sucked out of the cells. Thus, by the varying depths of the cells, soft effects and intense shadows are obtained in a single impression.

In printing colorgravure, a separate cylinder must be prepared for each color. For example, in four-color work, the colors are yellow, red, blue, and brown or black—the brown or black is referred to as the "key."

All portions of the copy that are to print in yellow are etched on a "yellow" cylinder; those to print in red on a "red" cylinder, and areas to print in blue on a "blue" cylinder. The type is usually on the "key" cylinder. All steps in four-color gravure are exactly as previously described, but each step must be done the four times—once for each cylinder.



Gravure press: Etched plate cylinder is inked by high pressure from nozzle in enclosed fountain to make certain all etched wells are filled. Doctor blade scrapes excess ink from cylinder as it revolves. Plate then comes into contact with the paper and the ink is drawn out of the wells.

Sheet fed GRAVURE



PHOTOGRAPHER—EUGENE HUTCHINSON
ADVERTISER—VANITY FAIR MILLS, INC.

In monotone, the rich full range of tone values, the unusual detail, the use of fine soft textured papers, make sheet-fed gravure an ideal medium for product and illustration.

J.C.DILLON *Company Inc.*

227 EAST FORTY FIFTH STREET, NEW YORK 17, N. Y.

Sheet fed GRAVURE



AGENCY—HAZARD ADVERTISING COMPANY
PHOTOGRAPHER—NICKOLAS MURAY
ADVERTISER—AMERICAN CYANAMID COMPANY

In color, sheet-fed gravure reproduces all types of copy authentically and by using fewer colors retains the original natural feeling. Notice the soft rich effects, the detail on the illustration above.

J. C. DILLON *Company Inc.*

227 EAST FORTY FIFTH STREET, NEW YORK 17, N. Y.

Inks

Because of the great speed at which the presses run, the ink used in rotogravure printing (with a rotary web-fed press) must be extremely quick-drying. Paper travels through some modern presses at the rate of more than 1,000 feet a minute.

Generally speaking, rotogravure ink consists of coloring matter, binder, and volatile solvent.

The coloring matter is usually a pigment having certain physical and chemical properties that are absolutely necessary because of the inherent characteristics of rotogravure printing. Whatever pigment is used, it should, among other things, be easy to disperse, should not react with polished copper, should not sublime at temperature below 200° Fahrenheit, and should have a fairly high tinting strength.

In the past, the most popular shade of rotogravure ink used for printing the pictorial sections of the Sunday newspapers has been a rich, dark brown. However, other shades, such as dark blue, dark green, etc., are available.

Colors for colorgravure—yellow, red, and blue—closely approximate the three primary colors used in four-color letterpress printing and, like those inks, are also transparent. Manufacturers can supply inks of almost any shade and hue for color printing in gravure.

Importance of binder

The binder is without doubt the most important component of rotogravure ink. Its function is to bind the coloring matter onto the surface being printed. The binder must possess the following:

A high melting point, usually between 250° and 300° Fahrenheit; easy solution; easy solvent release; little or no odor; low cost; freedom from substances that will react with pigment or polished copper; freedom from stickiness when free of solvent; and stability in solution.

Volatile solvent

The largest component is the volatile solvent. Viewed either volumetrically or gravimetrically, it is by far the largest of the three components, amounting to as much as 80 per cent of the formula in many cases. Its function is to render the binder into a homogeneous liquid that is referred to as a varnish or vehicle.

The solvent should have proper volatility for the job, good solvency, freedom from impurities that would discolor polished copper, agreeable odor, no residual odor, and low cost.

Sheet-fed photogravure presses are run at a much slower speed than rotogravure presses. The inks, therefore, do not have to dry as rapidly as rotogravure inks. Photogravure inks, while having the same basic elements as rotogravure inks, are of a much heavier consistency and dry more slowly.

While three to four times as much ink is required to print the same area by gravure as for letterpress or lithography, the total cost is not increased because gravure ink costs less per pound.

Papers

Because of the quantities of ink lifted out of the ink cells by the paper, gravure stock must be able to absorb a considerable amount of ink so as to "trap" it and prevent smearing or a "wormy" or "crawl" effect.

Gravure stock also should be free from glare and have a smooth surface. Both of these factors help the printer achieve a soft, clean reproduction of all tone gradations from delicate highlights to deepest shadows.

Other gravure requirements include sufficient opacity to prevent "strike-through" and a high moisture content—usually higher than the stocks used for letterpress. This is especially important to colorgravure, which calls for high speed printing on a continuous web on which each color must "set" in a very short time before being superimposed upon by on the next color.

Generally speaking, photogravure stock is heavier—thicker—than rotogravure stock. It usually has an eggshell or semi-antique finish. Its surface is firm so that fuzz will not be lifted off the paper and lodged under the doctor blade, thus preventing the cylinder from being thoroughly cleaned of excess ink. Fuzz causes smears. Photogravure stock should also have good compressibility.

Another important quality is elasticity. There is a tremendous amount of pressure brought to bear during the printing operation. As a result, the paper could be subjected to a great deal of stretching and distortion. A correct amount of resiliency, however, overcomes any danger of permanent harm.

Intaprint

Carbon tissue, used in conventional gravure for transferring the image to the copper cylinder, is eliminated by the Intaprint method. A continuous tone negative is made of the illustration to be produced, and from this negative a halftone positive is made through a special screen. Type matter is screened in a similar fashion.

Illustration and type are then stripped in position on a large piece of glass in something of the manner followed in deep-etch lithography. A copper plate, sensitized with a coating of glue, is brought into contact with the completed glass-plate positive for exposure and development.

The plate then receives one etch and, after being washed off, is ready to go on the press. Instead of a number of varying degrees of acid to cut into the copper through the carbon tissue, Intaprint uses only one strength from the start to the finish of the etching. Gradation of tone is controlled by the size of the cells in the finished plate, not by the depth, as in conventional gravure.

The Intaprint method was developed by W. J. Wilkinson of Zeese-Wilkinson Company, Long Island City, N. Y., through the cooperation of the Miehle Printing Press & Manufacturing Company, Inc.

Henderson method

The Henderson process is based on the employment of halftone positives (films) that are exposed by means of special equipment on cylinders sensitized with cold enamel (bichromated shellac).

Sensitization of the cylinders is performed with the aid of a specially designed whirler so constructed as to provide a dual motion to the cylinder to produce an evenly distributed, uniform film of sensitizer on the cylindrical surface of the gravure plate.

The apparatus for printing the halftone positives is arranged so that the movement of the glass bearing the halftone films is synchronized with the rotation of the sensitized cylinder. The exposure of a cylinder 35 inches in circumference takes place in 17½ minutes.

As with any other cold enamel print, the exposed image is developed with denatured alcohol (dyed); the cylinder then is washed, dried, and, after staging and painting out, is etched in a specially designed etching tank. Etching is performed with a solution of ferric chloride with the time of etching not exceeding 3½ minutes.

The Henderson process is intended for newspaper and commercial gravure, either in single or in multicolor work.

This method was invented by Charles L. Henderson, executive engineer of the Kimbery-Clark Corp., of Neenah, Wis.

Huebner method

Another recent American intaglio halftone process is the Huebner method, which may be employed either for inverted halftone (using halftone positives), or for regular gravure (with continuous tone positives).

For sensitizing the cylinders, the Huebner process dispenses with carbon tissue in favor of specially prepared solutions, one of which is a bichromated colloid mixture, intended for use with continuous tone positives. For this purpose, the sensitizer is so balanced as to induce uniform etching and the retention of a long range of tone values in the etched cylinder.

Sensitization of cylinders is also effected with a special machine in which gravity neutralizes centrifugal force to promote a uniform spread of the solution over the cylindrical surface. The apparatus has been patented and forms one of the equipment units in this process.

The second and perhaps more interesting unit is a photocomposing machine for exposure of either halftone or continuous tone images to a predetermined location on the sensitized cylinder. This permits a direct control over register of various images, especially in color work, particularly since images may be registered to within a plus or minus error of .001 inch.

To permit photoprinting on cylindrical surfaces, the image holder is in the form of a curved vacuum frame, which may be placed in any position on the face of the cylinder, and in which contact between the film and the sensitized surface is created by means of a vacuum pressure.

This method was developed by William C. Huebner of the Huebner Laboratories, New York City.

Duplicate sets

For many years, the greatest hindrance to the use of colorgravure by advertisers was the difficulty of furnishing suitable copy to more than one newspaper at a time. This eventually was resolved with the organization of the Intaglio Service Corporation of New York, whose position in the gravure field is similar to that of a photo-engraver who prepares engravings to be used in magazines to be printed by normal letterpress process. The procedure to be followed in using the facilities of the Intaglio Service Corporation is briefly this:

A complete comprehensive layout indicating the size and position of all the elements in the advertisement is supplied. This comprehensive should be accompanied by the original art work, photographs, type proofs, and all other material to be reproduced.

Art work and original materials are then used to prepare working negatives, which are retouched, staged, worked over, and combined in their correct positions as indicated by the comprehensive layout.

The result is a set of composite master negatives from which a set of positives is produced. If the advertisement is to be printed by gravure in the News-Dultgen process, the positives are prepared for that method.

Positives are printed on carbon tissue, which is then squeegeed on prepared copper plates. The next step calls for etching the plates exactly as cylinders are etched for a gravure press.

The completed plates are then put on a proofing press; progressive proofs are pulled and sent to the advertising agency for suggestions and corrections. These are intended to be treated exactly as a set of first progressives furnished by a photo-engraver preparing four-color letterpress plates would be treated.

When the progressive proofs, with corrections indicated, are returned, all changes are made on the original negatives. Then a set of positives is made for each plant that will print the ad. And, as with letterpress process plates, a set of progressives to serve as a color guide, as well as all other necessary instructions and information, accompany the positives when they are sent to the printing plant doing the job.

Dultgen process

Many gravure men have turned to the halftone screen to obtain greater sharpness of detail and a greater range of tonal values. There have been more than fifty patents issued for the use of gravure halftones.

The advent of the Dultgen Halftone Intaglio Process has made possible the greatest forward step in producing consistently better gravure than has happened in the industry in many years. Today it is used more than any other for the regular four-color gravure printing.

The Dultgen process and conventional colorgravure employ similar preliminary steps in photographing copy and making negatives. Both methods use the carbon tissue. But in the making of the positives, in the kind of screen used, and in the printing on the carbon tissue, the Dultgen process is a radical departure from conventional gravure.

Conventional gravure requires a continuous tone positive made from a continuous tone negative. The regular gravure screen is printed on the carbon tissue and the continuous tone positive then is applied to it.

In the Dultgen process, two sets of positives are made from the continuous tone negatives, one of which is screened with a special reverse halftone screen having a thinner cover glass, similar to the halftone screen used for making four-color letterpress plates.

Both of these sets of positives are printed on the carbon tissue, the screened positive first, then the continuous tone positive over it in exact register. The carbon tissue is then squeegeed onto the copper and the etching of the cylinder completes the process. This results in the ink wells being of varying size as well as of varying depth, giving the process two ways to control tone values.

Previously, many of the tone gradations that were easily held by a photo-engraver in a set of letterpress plates were lost by the gravure printer in the use of the conventional gravure screen. With the Dultgen process, such tones are held and shadow detail retained.

The Dultgen-News Halftone Method, which was invented by Arthur Dultgen of *The Daily News*, New York, is controlled by The News Syndicate, Inc., and licensed to users on a fee basis.

Among the plants that have been licensed to use the process are:

Alco-Gravure of New York and Chicago; Publication Corporation, New York, publishers of, among others, *This Week* magazine; Crowell-Collier Publishing Company; *Chicago Tribune;* Triangle Publications, Inc., of Philadelphia, publishers of *The Philadelphia Inquirer* and *17* magazine, among others; Toronto Star, Canada; Kable Brothers, Mount Morris, Ill.; R. R. Donnelley & Sons, Chicago; Cerre & Co., Detroit; Hall Printing Company, Chicago; Standard Gravure, Louisville, Ky.; Intaglio Service Corporation, New York and Chicago; International Color Gravure, Inc., N. Y. C.; Acme Gravure, Chicago; and Neo-Gravure Printing Company, Inc., New York, for *The New York Times Magazine* and *Family Circle* magazine.





Taking the GAMBLE out of Gravure

. . . Gravure once was risky as roulette . . . You put your money on the red, for instance, got crimson in Chicago, salmon in St. Louis, pink in Pittsburgh, scarlet in San Francisco, incipient measles in Minneapolis! Gravure was then the victim of geography.

Now gravure cross-country is consistent in color and effect in every medium, because . . .

The gravure printer doesn't start from scratch with original copy—but with Intaglio-processed positives which permit proper and uniform reproduction.

And because Intaglio pioneered in gravure proving, every gravure pressroom has a color guide, in a complete set of





Courtesy of the McBee Company

progressive proofs . . . which the advertiser has already seen, and revised to his satisfaction. Intaglio sets the standards to which reproduction must conform.

The advertiser served by Intaglio is spared all the confusing, complicated transactions that occur when dealing direct with many sources . . . is saved time and money, wear, tear and temper . . . is assured tranquillity instead of tension between closing date and publication.

Two modern new plants in New York and Chicago . . . completely staffed by skilled craftsmen . . . are equipped to process gravure, in either monotone or color—promptly, efficiently, economically.

Intaglio

SERVICE CORPORATION

AMERICA'S FIRST GRAVURE & LETTERPRESS SERVICERS

NEW YORK: 305 E. 46th St. • CHICAGO: 731 Plymouth Ct.
PHILADELPHIA: Land Title Bldg.

Screenless printing

Collotype is economical for short and medium runs and is particularly suitable for blow-ups, color printing from monochrome copy, and reprinting of screened material

Daniel B. Costigan

Screenless printing (photo-gelatin or collotype) is a process that in texture is similar to a photograph. Having no screen, it can be used to make reprints from work printed in another process without risking a moiré effect. Of the three basic methods of printing, relief (type or photo-engravings), intaglio (copperplate and rotogravure), and planographic (lithography), photo-gelatin falls in the last-named class.

While many of the steps in this process are similar to lithography, there are a number of differences in its technique and results. It is particularly economical for and should be considered for runs ranging all the way from 100 to 10,000.

Economical color reproduction

Photo-gelatin is a facsimile process of reproduction suitable for short or medium quantities. It has its place in the Graphic Arts for the reproduction of pictorial copy that would be too large and expensive for photography and too small for lithography. It eliminates the use of expensive plates for the printing of photographs or drawings, in one or more colors.

Inasmuch as no screen or dot is used in photo-gelatin, the result is a continuous-tone reproduction—the nearest thing to photography that can be obtained in a photo-mechanical printing process.

The photogelatin print, however, does contain a grain that is not visible to the naked eye.

Photo-gelatin uses

Photo-gelatin can best be used to produce short or medium editions of illustrated catalogs, booklets, displays, posters, picture postcards, greeting cards, blow-ups of magazine ads, and car cards. For color work, subject matter should not consist of very fine or delicate detail when the color separation is performed by hand. Collotype may be used:

1. When color reproduction is wanted from black-and-white pictorial originals.
2. For large blow-ups. Owing to absence of screen, blow-ups are as delicate in texture as smaller size reproductions.
3. When halftone proofs are enlarged as copy. Photo-gelatin permits a tint to come through between the screen dots, giving the enlargement the appearance of finer screen reproduction.
4. For reproduction of art subjects in full color. Also for scientific illustrations and those embodying microscopic detail.

It is also practical to use photo-gelatin in conjunction with other methods of printing. In the production of a high grade, profusely illustrated booklet, the pictorial matter can be made in photo-gelatin and the type matter printed in letterpress. Effective displays and posters can be made by combining one-color photo-gelatin printing with flat colors made by silk-screen printing.

Collotype printing, as is true of most of the other processes, can be had very inexpensively or can be used to make the most beautiful full color, screenless reproductions of art masterpieces.

Length of run

Photo-gelatin is economical for runs from 100 sheets up to 5,000 or even 10,000 impressions, with sizes from 17 x 22 up to 44 x 64 (maximum negative size is 42 x 62). Today, large rotary presses with automatic inking mechanisms are in use, replacing the old flat-bed presses on which inking had to be done by hand.

If treated properly, a plate will last for 15,000 impressions, although a day's run of 4,000 to 5,000 is considered good. Average press speed is approximately 5,000 impressions in an eight-hour day.

Probably the essential difference between different printing processes is in the manner in which tone values are produced, in how the light, middle, and heavy tones of the original copy are reproduced on paper. The key is in the making of the plate. Tones are produced by varying the amount of ink that takes to the plates and reaches the paper. The following sequence of steps in the making of a photo-gelatin plate shows how tone is reproduced without the utilization of a screen.

Plate-making steps

1. Subject (art work, repro proofs, etc.) is photographed; continuous-tone negative is made for pictorial matter; line negative is made for type, black-and-white areas.
2. Two unscreened negatives, combined and retouched, can be kept distinct and exposed to the plate separately, or can be stripped together and a single exposure made.
3. Parts not to be printed and edges of negatives are opaqued.
4. Plates usually are aluminum. For rotary presses, plates are commonly coated on a whirler. The turntable has a vacuum bed plate that holds the plate rigidly horizontal. Emulsion is poured on, spread by centrifugal force, and dried by heat elements in the whirler. A solution consisting of gelatin, bichromate of potassium, water, and ammonia is employed. Other chemicals may be added, dpending upon the weather conditions prevailing.
5. When plate is cool, it is placed face down on the negative in the vacuum printing frame. Best results are obtained by coating plates one day, exposing them 24 hours later, and putting them on a press 24 hours after exposure.
6. Plate is exposed to light through the negative. Exposure time depends upon the negative quality as well as the strength of light.
7. Transparent parts of negative, which will print black in the finished copy, allow the light to tan the bichromated gelatin. Dark parts leave the gelatin untanned. The grain produced is much finer than a fine photo-engraving screen and avoids the sharp distinction between inked and non-inked sections characteristic of lithography. Chemicals are washed from the unexposed parts of plate in developing. Plate then is left in a dustproof closet over night.
8. Glycerin solution soaking for about

30 minutes is the final stage. The amount of glycerin absorbed by the plate determines the amount of ink it will accept and so controls the amount of ink on the paper and the printing tones. The non-printing, unexposed areas of a plate accept more glycerin, swell more, leaving the printing areas .006" below the non-printing areas.

However, this different level is of little consequence in the process, as photo-gelatin printing is essentially a matter of chemical selectivity, the non-printing, glycerin-soaked areas repelling ink, the areas with less glycerin accepting ink in inverse proportion to the amount of glycerin that they have absorbed.

Tones in relation to steps

Sequence of steps in collotype and their bearing on tone reproduction are as follows:

Lighter parts of copy	**Darker parts of copy**
darker parts of negative	lighter parts of negative
tan little	tan much
harden little	harden much
absorb more glycerin	absorb less glycerin
swell much	swell little
repel ink	accept ink
print lightly	**print darkly**

In-between shades take ink and print as per original shadings.

9. Collotype makeready involves preparing the plate to accept the relative amount of moisture to give the required results. If shadows lack detail and are too dark, another application of solution is necessary, an alkaline solution for dark portions of the plate.

Tacky ink used

The ink used in photo-gelatin printing is very stiff and tacky and is fed from an ink fountain. Since the printing is direct, this heavy ink offsets. Slip-sheeting is used where the back of the sheet must remain clean. Rubber printing rollers distribute the ink over the printing plate. Moisture for the plate is supplied by a spray-gun or a humidifier that keeps the pressroom at 60 to 80 per cent relative humidity.

When the ink roller comes in contact with the gelatin plate, the unexposed or non-printing areas, which contain moisture, will not be receptive to the greasy ink. The printing areas that are hard and cannot accept the moisture will consequently take the ink. The middle tones, which have a varying amount of moisture because of the varying amount of light that struck those points during exposure, will take a proportionate amount of ink.

A variety of papers can be used in photo-gelatin printing. Offset, bond, ledger, vellum, or bristol can be used when tub-sized. Coateds and soft stocks are not preferred.

Because of the importance of a proper balance between the humidity of the pressroom and the moisture content of the paper, many photo-gelatin printers require that the paper be ordered specially made for photo-gelatin printing with a given moisture content.

In lithography, it is necessary to dampen the non-printing areas of the plate with water. In collotype, no dampening mechanism is required. The non-printing areas of a photo-gelatin plate are so constituted chemically that under controlled pressroom humidity conditions (60-80 per cent), the non-printing areas retain or absorb the necessary moisture from the surrounding air.

Acceptable copy

Original copy for photo-gelatin work may be a wash drawing, oil painting, water-color sketch, black-and-white sketch, kodachrome, repro proof, color print, or photograph; a combination of art and photography, or original negative or positive. A continuous-tone negative is made of copy, a line negative is made for type and is stripped in the actual position.

Satisfactory reproduction of type can be obtained, although this process is practical only where there is a considerable amount of tone value. Copy should be furnished ready for the camera with type proof pasted into position. If the type is to surprint over the pictorial copy, the proof of the type can be furnished separately. Type should be solid and should have no fine serifs.

Color copy

For color work, the original color copy may be hand or photographically separated. Hand separation is used for most commercial work. In this instance a single neutral negative is made. For each of the colors (and there often are more than four) a selective, stencil-like, hand-made mask is used to block out the areas not wanted for a given color.

The plate is exposed to the masked negative. This process is repeated, using the same negative but a different hand-made mask, for each desired color plate. The identical procedure is followed for color jobs that are to be reproduced from monochrome copy.

Hand separation

One of the advantages of photo-gelatin printing is that multi-color reproduction can be made from one-color drawings or photographs. Color separation negatives can be made when necessary from colored originals, but for most commercial work a single negative with the overlay method of separation is satisfactory and economical. When this hand separation is done by skilled craftsmen, it is almost impossible to distinguish between hand and camera separation.

Hand separations are made by painting out cellulose overlays in what are to be non-printing areas in the color being worked on and cutting away cellulose in printing areas. Copy is then photographed through this mask. Careful register of the mask used for each color must be maintained with the original.

However, camera separation is the more accurate but also more expensive, method. It is used primarily for art work. Usually only four negatives are needed, although as many as desired can be made. Color detail and tone are reproduced with remarkable fidelity. Some larger plants employ projector and step-and-repeat machines.

When reproducing by photo-gelatin a job formerly printed by process color letterpress, it is best to work from black proofs of the four color plates, although the progressives can be used.

Plate correcting

Since there is no way of getting proofs in advance of the press run, the plate as wrapped on the press may not yield the desired effects in some spots. The pressman can then lighten or darken certain areas of the plate up to 15 per cent to obtain the sought-after result.

If necessary, at night a new plate can be made with corrections for the next morning's use at little additional expense. Since the gelatin-surfaced plate is made-ready chemically, it is not possible to make multiple plates that are exact duplicates of each other.

These plates cannot be stored after use. Because of the economy of making new plates, there is no point in saving them. The negatives and overlays are stored, and can be assembled quickly for making new plates when needed.

fine art reproduced



by ARTHUR JAFFÉ

Color Collotype

Color collotype is the screenless process which by virtue of its continuous tone comes closest to color photography.

Perfect optical blending of the continuous tone layers of the basic colors gives this process the widely acclaimed supremacy in the field of art reproduction.

Color collotype, though a slow printing process in comparison to offset, letterpress, and gravure printing, is an ideal medium for color reproductions of the highest accuracy in not too large editions. Leading art museums and galleries throughout the nation have favored the use of this process in connection with the reproduction of their finest art masterpieces.

The illustration shown on the opposite page is one out of a large series of postcards, produced in the color collotype process. The subjects contained in this series are famous paintings in American and European Museums.

Catalogue on request. Cards priced at 10 cents each.

ARTHUR JAFFÉ, Inc.

3 EAST 28th STREET • NEW YORK 16, N. Y. • *Tel.:* LExington 2-8043-4

Silk screen printing

New paints, materials, techniques for process especially adaptable to oversize jobs, short runs, bright color work, printing on unusual surfaces

J. I. Biegeleisen

The silk screen process is a method of printing through a stencil that is permanently affixed to a porous ground or screen of silk.

The proper sphere for silk screen work is where:

The size of the job is beyond that of standard printing presses.

The runs are comparatively short.

It is desired to eliminate the expense of color plates in combination with letterpress or offset when brilliant colors are required.

A color of lighter hue is to be printed over one that is much darker.

It is necessary to print on heavy paper or board that cannot be handled by an ordinary printing press.

The printing is to be in brilliant gold, silver, and metallic colors.

The printing is to be on cellophane, metal, glass, or almost any other surface.

Wide adaptability

It is used not only for printing signs, displays, posters, book covers, car cards, outdoor billboard posters, banners, and other advertising matter, but also is used as much, or perhaps more so, in fields that come within the province of decoration.

The textile industry has adapted the process to its particular needs, developed special equipment, and now turns out colorfully printed designs on all types of fabrics.

Many concerns producing games and toys have found it convenient to employ this process for printing designs on the game cloths, dart boards, and other games that require the application of color. Furniture manufacturers use it to apply richly-colored designs directly to table tops and backs of chairs.

Decalcomanias

Decalcomania manufacturers have also found in this process the answer to short-run jobs that have to be done in several colors. Other users include the manufacturers of linoleum and carpets; wallpaper and lampshades; awnings, shades, and valances; ceramic specialties; greeting cards; novelty items; and instruments and dials.

It thus is apparent that this method of printing, which not long ago was just a sign painter's secret, now is a widely accepted and widely used process.

Limitations

There are some definite limitations to silk screen printing. While delicate effects can be attained with the right amount of patience and skill, the process remains best suited for flat-color reproduction, of the poster technique type of art work. Colors on the original should be distinct and not run into each other.

For commercial work, which must usually be turned out speedily to meet a deadline, it is better if the work does not require fine blending and transition of delicate tones. Also, since each color requires an individual stencil and a separate run, the fewer colors used, the faster the job will go.

Silk screen stencil printing differs from other stencil printing methods in that there are no isolated parts on the stencil that might fall out. This factor eliminates the disturbing use of links or bridges to hold the parts of the stencil together as in some stencil processes.

Silk screen principle

To clearly understand the principle of silk screen, it may be well to perform a mental demonstration. A piece of special silk, known as bolting cloth, is stretched across a rectangular wooden frame and tacked on tightly. This constitutes the screen. The screen next is attached to a flat board or base with hinges that will allow the screen to be raised or lowered easily.

A white card is placed on the printing base, and a free-flowing red paint is poured into the lowered screen. A rubber-bladed squeegee is used to force the paint through the fine pores or mesh of the silk. When the screen is raised, it will be found that the entire card has received an even coat of red paint.

The screen then is raised and a postage stamp pasted in the middle of the screen on the under side of the silk. When a fresh white card is placed on the base and the screen lowered, the squeegee once more is scraped across the silk. As the screen is raised this time, there will be found a red card with a white area in the center in the shape of the stamp that was used as a mask. The paper stamp has blocked out a part of the open mesh of the silk, thus making that area impervious to paint.

This explanation reduces silk screen printing to an elementary principle: any part of the silk screen blocked out by some means will prevent the penetration of paint; any part of the silk screen left open will permit paint to go through.

The means used to block out an open screen constitute the various methods of making the stencils. Each method has its own characteristics, qualities, and limitations. The principle methods are hand-cut film, photographic, tusche, paper stencil, and old-fashioned block-out.

Variety of inks, paints used

The selection of printing mediums depends primarily on the requirements of the job, since the stencil process is good for printing with a wide variety of mediums. Among these are: 100 per cent opaque waterproof color, transparent oil colors, gloss colors, dull colors, tempera water colors, gold and silver metallic paints, dyes, varnish, glue, asphaltum, rubber cement, etching compound; in fact, any medium that is of a free-flowing consistency.

The unusual assortment of silk screen printing mediums is matched by the extensive list of silk screen printing surfaces. Paper, cardboard, metal, metal-foil paper, wood, rubber, leather, cork, linoleum, cloth, glass, celluloid, etc., are all used in silk screen to produce posters, displays, book jackets, car cards, signs, novelties, textiles, window backgrounds, decalcomanias, 24-sheet bill-

boards, etc. Thickness of the stock has no effect; it is as easy to print directly on 150-point card as on 80-pound paper.

With silk screen it is possible to reproduce art work in any number of colors with fidelity and exactness of register. A three-guide system of registering colors is used that is not unlike that employed by other graphic arts. Each color requires a separate stencil, and if a job should call for fifteen distinct opaque colors, it would be printed in as many operations.

If, on the other hand, transparent colors are employed, they can be made to overlap to advantage, to multiply the range of hues. Many interesting and varied effects can be obtained by using color in the silk screen process.

Art work

In general, the art work for silk screen stencil printing need not be perfectly executed. A good pencil sketch with the colors indicated in crayon is ample. All lettering is "trued up" in making the stencil, so that in most cases the reproduction will be an improvement over the original.

The fact that the stencils can be made from a photocopy or a print, a pen or pencil sketch, at once establishes a considerable saving in finished art work.

There is a no definite maximum size beyond which silk screen becomes impracticable. The silk screen is not an inflexible piece of equipment, and since it is quite inexpensive it can be tailor-made to fit a job of even gigantic dimensions.

Whereas it is not usual to print jobs of more than five or six feet across, it is possible and practical with silk screen to print jobs of 20 feet or more, in one section, and involving but a single operation.

Because of the extremely simple makeready and the comparatively low cost of stencils, the silk screen process offers an inexpensive and versatile method of color printing. It is economical for a number of reasons.

Printing displays

The printing is done directly on a stock of any thickness, thus eliminating the costs of mounting and counter-mounting; jobs of large sizes can be done in one piece rather than in sections; and the process lends itself to work from pen or pencil originals, thus obviating the need for expensive finished art work.

As a rule, the printing is done by a crew of two. The squeegee man manipulates the squeegee, and the take-off man removes the prints from the printing base and sets them away in the drying rack. The non-automatic nature of this procedure accounts for the comparatively high cost of the actual printing.

Printing speed

Because it is a hand-manipulated process, the rate of production varies from 150 to 500 prints an hour, depending upon the nature and size of the job. The relatively high cost is more than offset, however, by the inexpensive makeready and the low cost of stencils. This makes it possible for the silk screen process to produce many jobs in quantities from as few as 10 prints to as many as 10,000 or more in a method that is completely economical and satisfactory.

The silk screen process, being hand operated, takes over where other graphic arts are impractical for one reason or another. Here is a hypothetical case in point:

A call comes in from a political club on the Friday before election: Can 500 cloth banners measuring 3 by 18 feet be printed in two colors and rushed out over the week-end? The signs must be up by Monday morning.

To a silk screen printer, such a request is not unreasonable. He can provide such service when necessary because the simple "machine" that does the printing can be made ready at a moment's notice to suit these or any other unusual dimensions. Even an order for a sign 25 feet long, all in one piece, could be handled quickly and economically.

The following developments in the silk screen field are comparatively recent:

Stencil film: This extra thick film was developed for jobs where it is desired that a heavy deposit of paint pass through the screen to give the effect of embossing.

Fluorescent paint: One was introduced recently that can be stenciled directly through the screen just as any other printing medium and that leaves a layer of paint that glows in the dark.

Ceramic paint: This enamel-like paint dries with a high gloss and is so prepared that it holds tenaciously to glass, foil, and other non-absorbent surfaces.

Silk screen presses: For the last few years, several companies have been producing silk screen printing machines. Although all these machines have not yet been found practicable and as a group have not been generally accepted by the trade, they indicate a possible trend.

The flat-bed printing press for work of standard size has been on the market for some time. There now is a silk screen machine for printing on cylindrical surfaces such as milk bottles, tumblers, cosmetic containers, and jars. Where the containers are made for re-use (i.e., milk bottles), a ceramic paint is stenciled on and kiln-fired to insure that it will resist handling and frequent washing. For containers that are not intended for re-use, a ceramic paint is available that clings fairly well to the surface and does not require kiln firing.

There now is a new type of silk screen printing machine that works on a rotary, rather than on a flat-bed, principle, and has done much to speed up production.

This press will print any style silk screen stencil, from celluloid and paper to carbon tissue, 1,000 to 1,500 an hour, with any type ink or paint ordinarily used with the hand-operated stencil unit. However, because of the speed of operation, one-minute-drying lacquers are being used with this press. Other claims for this press include:

Quick makeready, thus making it profitable to set up for lots even as small as 300; easy set-up and removal of screens; simple ink fountain; squeegee angle control for a heavy or light deposit of ink; split squeegee can run three colors at once if desired; convenient feeding as in any printing press; prints paper, metallics, metal sheets, acetate sheets, and cardboard up to .40 pt.; press sizes up to 44 x 64 inches; prints anything in halftone and full color up to standard 133-line screen.

Printing with transparencies: There is a crystal clear transparent base available that when mixed with regular opaque pigment produces a clear, transparent paint. Through careful planning of art work and the sequence of printing, transparent paint makes it possible to obtain innumerable color effects with but a few overprintings.

Three and four colors: Three- and four-color photographic halftone screens turn out commendable silk screen work with halftone stencils. They combine the advantages of halftone work with the unusual flexibility inherent in silk screen printing to achieve an excellent effect.

Truthful reproduction

BY THE SILK SCREEN PROCESS

After you have given to a job the best of your thinking, bought for it the most expressive art, the most effective typography... then, Mr. Art Director, Mr. Production Manager, you want truthful reproduction... reproduction that reveals all the values you have put into your work. To the interpretation of your original we bring the resourceful planning, the careful attention to detail, the integrity of craftsmanship in every step, that are indispensable to truthful reproduction.





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DISPLAYS • POSTERS • PRESENTATIONS • SILK SCREEN PROCESS

Shading sheets: Special sheets bearing dots, lines, and other patterns can now be used with photographic stencils to produce a great number of additional color values. When the patterns are properly superimposed, it is possible to produce 63 different color values with about 10 printings.

Photo transfer sheets: Ready-made sheets are on the market that enable even those not versed in photography to make photo stencils. This photo transfer film is easy to apply and can be used for single-color line or halftone work.

Special glue: This refers to the special glue stenciled onto cardboard upon which cloth strips will be adhered. When a multicolor design is to be printed on loose cloth, this system is used to simplify registration of colors. The flexible cloth is attached to a cardboard that has been stenciled with this special silk screen adhesive, which will not harm the cloth. After all colors are printed, the cloth can easily be pulled off the original sheet of cardboard.

Adhesive paints: These are used to print a foundation or ground on which some other material is to be applied. While the adhesive medium is still tacky, flock, sand, or tinsel may be applied over it. When the paint foundation is dried, the textural material sprinkled over the surface becomes an integral part of the print, with excellent adherence.

Glass etching compound: "Screen Etch" compound may be applied through a silk screen to give a frosted "bite" to a glass surface. The resultant etch—lettering or a design decoration—is similar in effect to a frosting. This chemical paste is safe to use, and harms neither the hands of the operator nor the stencil.

Trends and forecasts

In photographic stencil methods, there is evidence that the silk screen process in the future will go beyond its natural limitations—that of producing flat work. The process will turn out work closely resembling lithography. Fine four-color prints are being produced with carbon tissue stencils.

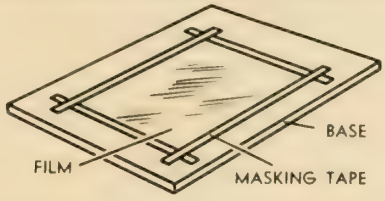
Printing machines are being developed—some are in operation—that more than triple the output of hand-operated stencil units. Power-driven stencil presses are capable of producing from 1,000 up to 15,000 impressions an hour.

Other specialized equipment and presses are available for printing on cylindrical surfaces and on odd shapes, by which bottles, jars, and industrial containers are silk screened with a permanency and color effect impossible to obtain with a standard paper label.

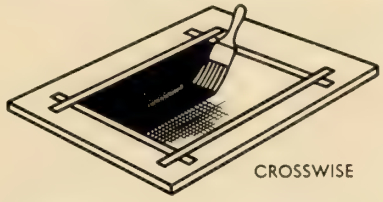
Silk screen printing is being applied for furniture and toy decoration, trays, decalcomanias, and for many other uses.

Steps in making a photographic stencil

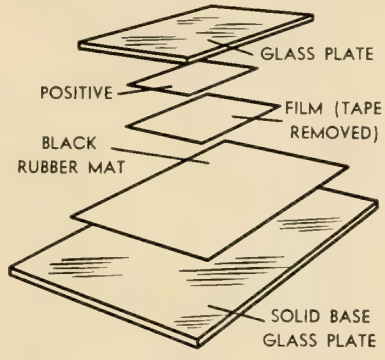
Among recent developments in silk screen are hand-made stencils and four-color process photographic stencils. Illustrated below are eight basic steps in making of a photographic stencil by the transfer method, using a daylight film.



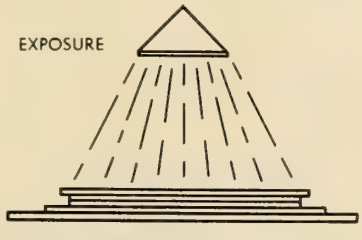
1. The photographic film is fastened, with the emulsion up, onto a flat cardboard or glass.



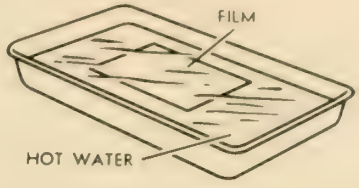
2. Sensitizer is evenly coated on the film with camel's hair brush. It dries in about 15 minutes.



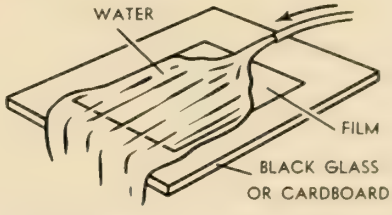
3. Contact set-up (cross section) for exposure. Starting with the table and going upward, we have a sheet of plate glass, a piece of black felt or a black sponge rubber mat, then the sensitized film with the emulsion side down, positive, face down, and a sheet of plate glass.



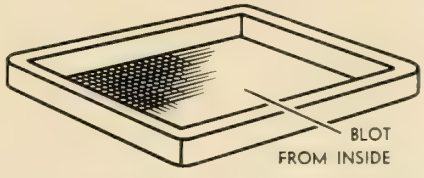
4. Light for exposure may come from the sun, carbon arc lamp, or a photoflood bulb.



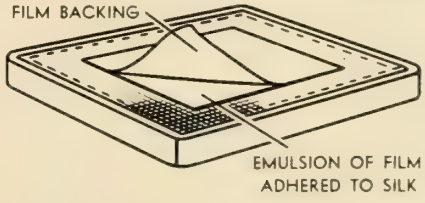
5. Film is developed by submerging it, emulsion side down, in a hot water bath of 120° F. In just a few minutes the copy image will wash away from the film, discoloring the water. Film is then turned emulsion side up. Development can often be hastened by agitating the tray.



6. To fix image the film is placed with the emulsion side up on a sheet of black cardboard or of glass and then sprayed with cold water.



7. Film is adhered to the silk screen by blotting all excess moisture with newspaper sheets. Film must be thoroughly dried. This blotting process impregnates the emulsion of the film into the silk. An electric fan is frequently used to assure thorough and rapid film drying.



8. Backing sheet is peeled off in last step leaving film emulsion adhered to silk. The screen is now ready for the printing. After the job has been printed and if no re-runs are planned, paint is removed from the screen with a suitable solvent and the screen is washed clean in a solution of hot water and 5 per cent ammonia. Then the silk is rinsed with a sponge and cold water and dried. It can be used again.

Steel and copper plate engraving

Hand and acid engraving, pantagraph machine, cameras, and hand-fed presses help skilled craftsmen produce high quality work; same size sketch is preferred

Frank B. Siegrist

Engraved stationery is produced by a branch of the Graphic Arts known as the steel and copper plate engraving industry. While technically the engraving is the steel or copper plate, into which the design has been cut with a graver, the term engraving is also applied to the impression of that engraving on paper.

In making a plate, the design is engraved or etched in the surface; this is what determines its character as intaglio engraving. If thin metal is used, it is called a plate, and may be either steel or copper. If heavier metal, usually one-half inch thick steel, is used, it is called a die, but the printing process is the same for either. For long press runs, dies may be case-hardened, and both plates and dies may be chromium faced to withstand wear.

The work in a modern engraving plant consists of engraving the plate or die, in the engraving department, then making the impression on paper in the pressroom.

At first, plates were engraved by hand by engravers who had gone through a long period of training in the use of different gravers. The gravers themselves are small steel tools about five inches long, held in a wooden handle. The tool is pushed through the metal, cutting out a sliver or piece of metal, and each tool makes its own characteristic cut, to fit the requirements of the particular design or letter that is being engraved.

Etching with acid

Today, acid etching is a considerable help in engraving and is used with much skill in attaining desired effects. Heavy lettering may be outlined with a graver and the heavy strokes then etched with acid. For copper, iron chloride is the agent, while with steel some solution of nitric is generally used.

For tone effects, a series of fine lines may be engraved, or ruled with a diamond point on a ruling machine, and then etched. Designs or picture work may be done by the point etching process, in which the design is drawn with a steel point through the etching ground, which is an acid-proof coating. Thus the metal is exposed where the design is drawn, after which acid is poured on, to etch the design into the metal. A letterhead die is usually produced by a combination of the processes of hand engraving and etching.

Pantagraph machine

The pantagraph machine has been of great aid to engravers in producing lettering, such as Gothic. Larger master plates of the letters to be used form the basis of this process. The machine reproduces these letters in the small size desired by tracing with a diamond point that scratches each line through the etching ground of the plate, so that it may then be etched.

Most lettering done in this way must then be finished by hand with the graver. This machine only scratches the form of the letter on the plate. The removal of the metal which makes it intaglio must later be done by hand with a graver, or with acid, but usually a combination of the two.

In recent years progress has been made toward production of these plates by photography, and it is possible to photograph a drawing on metal and etch it to produce an intaglio plate.

The printing of an intaglio plate involves the inking of the plate, wiping off all surface ink so that it remains only in the engraved lines, and then making the impression on paper by the use of pressure, forcing the paper into the engraved lines and drawing out the ink. This work is done in the pressroom. Power presses are capable of producing about 1,000 impressions per hour.

Hand-fed presses

These machines are hand fed and this keeps the cost per impression rather high in comparison with other printing processes that can run letterheads, 4, 8, or 16-on, upon automatic-feed presses.

Efforts are continually being made to perfect an engraving press that can be fed automatically, and it seems reasonable to expect that this will be accomplished in the near future. When this is done, new fields for the sale of engraving will be opened, as for instance the larger runs of letterheads.

In preparing copy for the engraver, it is customary to make a selection of a letter or design from engraved samples he will furnish. The engraver may then show a sketch of the desired copy, drawn to size, giving a quite accurate idea of how the finished die will look. Proofs are not ordinarily shown as changes are difficult, and sometimes impossible. It is always best to work out the details of lettering and arrangement before the die is engraved.

It is possible to work from a drawing two or three times the desired size, especially if photography is to be employed in making the engraving, but most engravers prefer the sketch made to exact size. There are experienced artists who will furnish drawings for engravers, but many of the designs are produced by the engraving houses or specialists.

Uses for engraving

The most familiar use for engraving is for currency, stamps, and stock certificates. An inherent quality in all genuine engraving is that the ink will always rub, or offset, and a pretty sure test of a counterfeit bill is to rub it over a white paper.

Engraving is especially suitable for letterheads, announcements, and cards, for it adds a feeling of dignity and quality whenever it is used. Engraving stands unequalled for fine wedding stationery and correspondence, monograms, coats of arms, and trade-marks and a variety of other kinds of work.

Steel and copperplate engraving has an enviable place in the family of graphic arts. It is one of the oldest and has undoubtedly remained one of the best mediums with which to achieve excellent effects in black or in colors for a wide variety of graphic arts uses.



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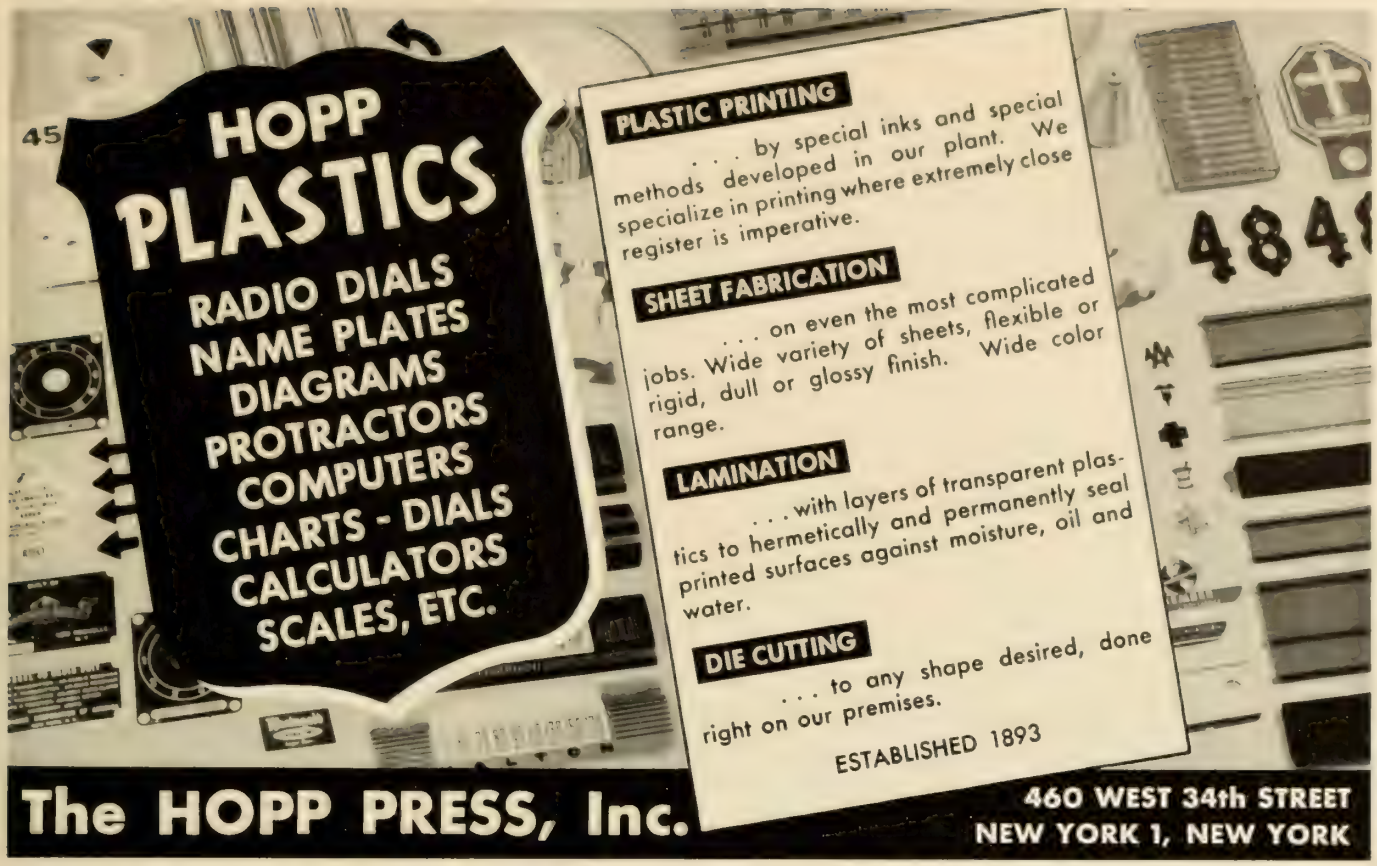
Steel Engraved Stationery

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"Your letterhead is the voice of your business; engraving is the tongue that gives it eloquence."

Printing on unusual materials

Material	Processes		Remarks
Bookbinder's cloths	Die stamping Letterpress	Offset lithography Silk screen	Cloth that is to be printed on should have a minimum of filler. Close weave is preferable. Process color jobs are printed letterpress by a special wax-plate process.
Burlap	Letterpress Silk screen		Letterpress printing on burlap should be done from rubber plates. Silk screening is best with flocking.
Cellophane	Aniline Decalcomanias	Gravure Letterpress	Aniline or oil ink printing is especially good for this type of work. Aniline printing also provides long runs and economical reproduction, while oil printing is used for smaller runs. Lacquer can be used.
Cork	Die stamping Letterpress	Silk screen	Results cannot be absolutely uniform because of the irregular nature of the printing surface.
Corrugated, Corabuff, Raytrim, etc.	Airbrush Letterpress Offset lithography		Rubber plates are needed to achieve the best results when printing letterpress.
Glass, China	Decalcomanias Etching Hand painting	Sand blasting Silk screen	Silk screen work requires firing for permanence. Decalcomania production is achieved with stencils.
Leather, Leatherette	Branding Die stamping	Silk screen	Gold leaf is recommended where permanence is important in die stamping.
Metal foil	Gravure Letterpress	Offset lithography Silk screen	The sheets should be rack dried to prevent offsetting, particularly in silk screen work. The use of letterpress has been found to produce the best results.
Oiled silk	Copperplate printing (Intaglio)	Silk screen	
Parchment	Airbrush Hand painting Letterpress	Offset lithography Silk screen	For letterpress printing, engravings, type, plastic, or rubber plates can be used.
Plastics	Letterpress Sand blasting Decalcomanias Die stamping Etching		Cellulose acetate and vinyl sheeting are used extensively for all types of containers, decorative effects, and book jackets where transparency is desired. Colors can be rolled onto raised surfaces or rubbed and wiped into sunken surfaces. In letterpress, greater success has been found through the use of oil inks, rather than aniline inks. New vinyl inks have been developed for use on plastics.
Rayon, Silk, etc.	Letterpress Offset lithography Silk screen		Material should be backed to assure register in feeding. Rayon or silk book cloths can be printed letterpress by a special wax-plate process, with full color halftones reproduced in good register.
Rubber, Pliofilm, etc.	Gravure Letterpress	Offset lithography Silk screen	Silk screen is preferred to letterpress or offset because the stock is very limp and thus not adapted as well to the rapid feeding presses used in letterpress or offset.
Scotch tape	Letterpress Aniline Gravure		A special type of cellophane on which the design is printed before adhesive is applied. A special coating then is applied that protects printed matter against the adhesive and serves as a base to which the adhesive will cling. The adhesive alone will not adhere to the cellophane.
Sign cloth	Letterpress Offset lithography	Silk screen	Wood blocks print effectively on sign cloth. Nonfilled cloth is best for waterproof results.
Steel, Tinplate, etc.	Etching Gum process	Offset lithography Silk screen	When working on metals, it is best to plan for poster effect.
Textiles	Copperplate (Intaglio) Hand blocking	Offset lithography Silk screen	See also "Rayon, Silk, etc.," and "Bookbinder's Cloths" above.
Wire mesh	Silk screen		With flocking.
Wood, Wood veneer	Branding Letterpress	Silk screen	A heavy cover ink is necessary when printing letterpress.



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New products and techniques

Many interesting developments recently introduced in the graphic arts field; descriptive data on products not treated elsewhere in this volume

Norman D. Rothman

Akravue: This technique now makes available three-dimensional photographic full-color transparencies. Now commercially adaptable for advertising displays, it is claimed that three dimensional prints will be perfected shortly. No viewing device is needed by the person looking at the transparency to get the full dimensional effect. The process uses a standard camera, lens, and film. A ridged vinylite screen is moved across the film as the picture is taken. A similar screen is placed over the transparency when it is mounted as a display. At present Akravue is limited to indoor stills. The screen used has 80 lenticulations to the inch. As with Dimensional Arts and Trivision, described elsewhere in this volume, the inventors of the process are working out a method of securing the three-dimensional effect in printed and lithographed matter.

Alterproof paper: This paper has negative and positive designs on opposite sides. Similar electro rollers are covered with films having negative and positive images, exposed, etched, then print paper passed between them.

Aluminum foil laminant: Synthetic thermoplastic resin emulsion adhesive for foil lamination, primarily for roll applicator machines, produces a transparent film that is claimed to be odorless, nontoxic, and waterproof. Designed to handle all grades of aluminum foil, cellophane, acetate, glassine, bond, kraft, sulphite, chipboard, etc.

Artype: In this technique of "paste-down" letters and logotypes for offset and letterpress, "fonts" of types and printer's devices are printed on transparent self-adhesive acetate film. Letters are cut apart and adhered to copy by the pressure of a stylus. This is claimed to be smearless because printing is done on under-side of acetate. More than 100 alphabets are available.

ATF book edge imprinter: This semi-automatic machine was designed for the imprinting of alphabetical indexes or advertising on the edges of trimmed perfect-bound or hard-bound books before rounding and casing-in. Silk screen is used. Air-controlled steel plates compress sets of books to the same fixed thickness as the preceding group, assuring register.

Bostik cement No. 4500: A thermoplastic adhesive developed for adhering photo-engraved plates and electrotypes to wood blocks, without using nails or lead anchors. The adhesive is spread on the block while the plate is being heated to about 350° Fahrenheit. The heated plate is next placed on the cement-covered block and pressure applied for 10 seconds. Plate is then blocked. It is claimed that only a solvent or reheating will permit plate to be removed from the block adhesion being very firm.

Calculaide proportion rule: Fabricated of tough, noninflammable, nonwarping plastic $8\frac{1}{8}$ inches square, this device is designed to solve, at a single setting, such problems as reduction, enlargement, percentage, ratio and proportion in layout, engraving, offset or gravure work. It provides a precision circular slide rule as well as inch, pica, and type scales from 5 through 12 point.

Carson electronic micrometer: This is a portable device with highly sensitive electronic tubes for testing the uniform thickness of all kinds of paper.

Chromocritic: This device enables those who buy, produce, and print process plates to view color transparencies with similar light sources. The buyer determines desired color tones by adjusting two light sources. The meter readings of these sources are marked on the edge of the transparencies. Engravers and printers then view transparencies by setting their light sources according to the marked meter readings.

Cronak process: This process is said to solve problem of zinc litho plate oxidation. Longer plate life, better prints, and less press trouble are claimed for zinc plates over which has been poured Dilute Cronak, whose formula includes sodium bichromate, sulphuric acid, and water.

Davidson paper master: Paper-like ready-to-use printing plate for all offset duplicating machines, this is claimed to be as smooth and flexible as heavy paper and to require no special preparation. Illustrations and hand lettering with pen, brush, crayon, or pencil, and typing or Varityping may be done directly on the plate. Multicolor work uses separate plate for each color. Positioning of copy is facilitated by marginal scales.

Delkatone pre-makeready electros: Flat or curved electrotypes are treated to control relative press pressures required of varying tone densities. Solids are made slightly above type height, with shadow dots, middletones, and highlights progressively lower.

Ektacolor: Kodak Ektacolor Film is a color negative material recently introduced by the Eastman Kodak Company. Being a negative it eliminates two steps in color print making. Adapted for contact and enlarged prints. Ektacolor is comparable to Kodachrome and Ektachrome in speed. It is designed for use in artificial light and will be available early in 1948 in sheet sizes from 4 x 5 to 8 x 10 inches.

The new film will permit three times overexposure but very little underexposure. It is designed for processing by the photographer. The use of colored couplers incorporated in the three-layer film make both masking and the making of separation negatives unnecessary in the production of high quality color prints.

Correction is automatic in developing and the processed film is actually a set of color corrected negatives in one film. Negative colors are complementary to those of the original subject. Black-and-white prints can be made from Ektacolor negatives. A special processing kit



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and the new Kodak Pan Matrix Film are used to develop the film. Processing the negatives takes about an hour. Making of the color print from the negative takes about another hour.

Electronographic press: A new printing press development based on the concept of "printing without pressure" and using "tube forms" instead of the usual printing forms and plates. The process operates on the principle of permitting the paper to very closely approach but not touch the forms, and at that moment allowing the ink from the printing tube form to jump the gap between the form and the paper, thereby transferring the exact image to the paper. The developer claims that this system, using one press for all printing processes (letterpress, offset, and gravure) materially reduces press preparation time, such as makeready, etc. Any web-fed material can be used, printing twelve colors, six on each side, and is adaptable to short runs.

Empco proportioning rule: The scaling of copy, which has always been a bugaboo to the Graphic Arts worker, is greatly facilitated by the new Empco Proportioning Rule, an instrument that is claimed to eliminate the errors attendant upon the use of other devices. It performs the scaling operations, both mental and physical, simply, automatically, and instantaneously.

Invented by Clarence S. Ost, who also evolved the Luxometer, this rule is essentially two instruments in one: a linear rule and an automatic proportion calculator, unique in that it requires no measuring of copy and no transference or transposing of figures to such other aids as a slide rule, etc.

The Empco Proportioning Rule, which is pyramidal in shape, 20 inches long and an inch wide, consists of two sliding indicators that move at all times in the same direction and in exact proportion to each other.

Instead of measuring the copy, the user merely sets these indicators to the physical dimensions of the copy, the black indicator at the long dimension and the red at the short. Assume these to be at 9 and 3 inches, respectively; movement of the black indicator to 12 will automatically advance the red to 4, or shifting of the black to 6 will automatically move the red to 2, the original 3-to-1 proportion being maintained throughout.

The instrument contains four scales, an 18-inch linear scale divided into sixteenths, a percentage scale divided into units of one-half of 1 per cent, and scales of 108 picas and of 252 agate lines.

Fairchild photo-electric engraver: A device for producing halftone plates by optical, mechanical, and electronic means, this is a lathe-like machine that utilizes two rotating cylinders. The positive photograph, on one cylinder, is scanned by an optical system that activates a heated, V-shaped engraving stylus, which burns small depressions into a plastic material on the other cylinder. The depressions are evenly spaced, producing the characteristic halftone pattern. The engraved plastic is then removed from its cylinder and mounted, becoming the actual halftone printing plate. Speed and ease of operation are claimed for this process, which at present is limited to a 65-screen, 8x10-inch engraving, which can be made in about 20 minutes.

Filmonize laminating film: A transparent pressure-sealing type of laminating film is said to fuse itself to paper instantly by slight pressure at ordinary room temperature, relying neither on heat nor on added adhesive agents. Either sheet or roll stock can be Filmonized on a special machine that can rewind.

Harrison art: A letterpress printing process especially adaptable to color process printing on any surface paper and cloth. Utilizing specially prepared wax fiber plates that can be produced at low cost, a wide variety of work can be turned out in a relatively short time. While the plates do not last as long as do copper originals or electros, their inexpensiveness permits longer runs using two or more sets. Printing on book cloths has been particularly successful.

Hoe six-color offset press: Sheet-fed press that prints a sheet 50x72 inches, this is said to operate at speeds up to 6,000 impressions an hour. Close register is maintained by a travelling gripper bar that holds each sheet in the same grippers and at constant speed through the entire printing operation, from feeder to delivery.

Integral case-maker: This machine makes strong, flexible, one-piece book cover cases from paperboard, or with prelined cloth board. It was developed principally to produce cases for inexpensive books that ordinarily might be paper-bound or covered with very low-priced book cloth. Integral case-maker is hand-fed. All sheet edges are glued in the machine, turned in, pressed, and receive a slight score that it is claimed doubles the strength. A trim corner is achieved by a simultaneous die cut. Any size volume can be handled.

IPI trimetal plates: Offset plate permits longer press runs by increasing plate resistance to wear and cracking. It is composed of three layers of chromium, copper, and, as a base, zinc or steel, and is processed in the same manner as a regular deep etch plate. The chromium plating is removed from the design areas, exposing copper as the printing surface metal. Because the halftone areas maintain 100 per cent ink receptivity during the entire run, it is claimed that the last sheet is as clear and sharp as the first.

Iriscope color filter: Through this viewing filter, it is said that any black-and-white photograph taken with an uncorrected lens can be translated back into the original colors of the photographed objects. The viewing device is based on the principle that each color ray forms a pattern at the same depth in the film every time. Using film positives made from negatives, these patterns are projected through the concentric circles of the Iriscope filter, resulting in a true picture in the original colors.

Label-dri: A high speed, fully automatic bottle labeling machine using thermoplastic coated labels, eliminating the use of paste and water. It is said to apply 300 labels a minute.

Label embossing press: This machine manufactures one- and two-color seals and labels, embossed and die-cut, in one operation.

Land one-step camera: This snapshot and self-developing camera delivers a finished print about one minute after picture is taken. A positive print is produced on paper by chemical reaction occurring simultaneously with the development of the negative image inside the camera following exposure. Breakable "pods" containing a viscous fluid developer-fixer are attached to the paper at intervals, and as the roll is turned, the strip breaks, causing the fluid to process the picture.

Lawrence copyfitter: A simple, practical, self-contained copyfitting calculator, this booklet-like device is designed to operate



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with one setting, and used for any type face or size, with or without leading, upper or lower case.

Lawrence printer's proportion rule: A slide rule adaptation, this enables one to see at a glance changes in proportions, either in picas or inches. It is used to determine the reduction or blow-up size of a photograph, drawing, etc., by setting the rule to the original dimensions and reading the proportioned size on the other scales.

L. R. type indicator: The effect of actual type on rough or finished layouts without actually setting the type is achieved with this device. The Indicator consists of a small wheel with a type face reproduced in rubber around its circumference. The desired type face wheel is selected, attached to a handle, rolled on an ink pad and ruled in on copy lines.

Lumiprinting: In this new technique for art production work, the artist draws or paints on glass, celluloid, or any clear transparent plastic. These are then considered hand-made negatives from which contact prints are made with light, using the same process as for regular camera plates or films.

Luxometer: A light integrating device, this utilizes an electronic circuit with a mechanical counting device for measuring the quantity of illumination received by any light-sensitive material. It automatically shortens or lengthens exposure period to compensate for fluctuating light intensities. For the printing of offset press and photo-engraving plates, it is said that exact duplicate exposures may be made. In step-and-repeat work, uniform exposures may be obtained throughout the entire press plate.

Microflash: Stroboscopic light source for photographic exposures of two one-millionths of a second, this consists of a power supply and other mechanism for producing an intense fractional second flash that may be tripped electrically or by a microphone, which is supplied. An amplifier and gain control are built in. Ordinary film and camera equipment can be used.

Morrison slug stripper: A saw especially designed to cut any line slugs or foundry type characters to the correct thickness to fit mortises or other open areas in photo-engravings that have been mounted on metal, in electrotypes, or in shell stereotype casts. The machine will hold type up to 72 points in width and 30 picas in length.

McCorquodale color process: Developed for printing up to 72 colors at one impression, it is used for paint, enamel, and lacquer chip cards, and for printing dyes on fabrics. Cellulose base liquid colors are printed directly on card, eliminating cutting up and hand glueing of sheets. A closed tank has a nozzle and tube leading from each of 72 color-containing compartments to a matrix (or mask). Air pressure controls flow.

M-V-Bar: This is a form of Aquastop for controlling the humidity content of paper. An envelope or prefabricated bag of M-V-Bar is inverted over loaded skid of paper and held in place with temporary seals. The product consists of a synthetic impregnated, coated, and chemically treated strong fabric that is flexible over a wide temperature range and is waterproof and moistureproof.

Nu-etch process: Evolved for speedier, more reliable re-etching and finishing of black-and-white halftones and duotones, this process eliminates staging but is said to result in accurate reproduction. It is claimed that only on difficult finishing problems does re-etching of halftones, singly or in large flats, require more than 15 minutes. It is adaptable to present equipment.

Opatone chromatic colors: This series of 10 standardized grays may be applied with brush or airbrush to regular drawing materials, celluloid, glass, or other transparent or translucent materials. The gray tones are on the warm side to help produce clean, graduated tones. The colors may be used for retouching, drawing, outlining, color separations, negative opaquing, and mask-making.

Ozachrome: A method of obtaining color proofs of screened or unscreened lithographic or gravure color separation positives before printing plates are made. Four film layers are impregnated with dyes that correspond to process colors. Positive for each color is printed on a transparent sheet containing dye for corresponding color. Prints may be superimposed in register for comparison with original. Full color print may be used for advertising displays, etc.

Papertone: Paper coating material for preserving surfaces of newsprint and other wood pulp papers, this also enhances legibility and illustration color values. It gives the paper a lustrous coating without striking through the sheet.

Perry-Higgins method: This system of utilizing full-page photo-engraved press plates was developed to eliminate many of the steps now in use in the general method of newspaper printing production. It provides for the setting of body copy on proportional spacing typewriters, with the headlines and subheads set photographically, and proofs of advertising mats rather than the mats themselves. Photo-engraver's negatives are made of body copy, heads, and ads and engraved on page-size thin magnesium plates, which are then placed directly on flat-bed presses, or easily curved and put on rotary presses, for printing. This system is best suited for weeklies or small dailies with one edition.

Powers color process: For color reproduction in newspapers, this is designed to furnish black-and-white-corrected paper prints of color separations. Each group of prints is identical in size and is handled as black-and-white work in the engraving department. The process utilizes the Chemco Color Separation Machine and the Chemco Enlarging Machine. The former is a darkroom, scale-focusing camera that makes color separation negatives on 8x10 dry plates from color copy or transparencies. It makes color corrections at the same time as the separations. Cold white fluorescent light is used. Plates made by this machine are placed in Chemco Enlarger that projects onto a print holder at the far end of the machine, back of which is a ground glass. This is said to assure sharpest focus in exact size before the enlargement is made.

Registron: Designed to provide instantaneous indication and correction of misregister while web is travelling faster than 1,000 feet a minute, this electric eye device for multicolor printing scans preprinted register mark just before the area to be printed reaches the next impression point. Waste is said to be reduced considerably while hairline register is maintained throughout the run. This also is applicable to cut-off, scoring, perforating, and punching.

Tension plate autoshaver: This processes newspaper stereotype plates for the Goss "tension lock-up" system on newspaper

presses by machining pockets on the inside of the plate, which fits them for tension lock-up.

Rubber plate mounter and prover: This machine proves and registers Mosstype single or multiple rubber multicolor plates and roller designs away from the presses on which they will run. Removable plate cylinders provide methods for exact circumferential spacing and horizontal alignment of multiple plates. Adjustable impression cylinder is geared to plate cylinder for proving. Cylinders so prepared are ready for press use.

Silk screen ink: For the silk screen process on glass, this ink, when heated, is claimed to form a hard, glossy surface that will not scratch or mar. Resistance to alcohol and other perfumery and lotion agents is also claimed. A specially treated silk screen and new printing technique are required.

Spectrotone color process: Simplified and economical manufacture of color plates is claimed, with printing by three-color plates accomplishing what has always required four. This process, with its greater speed in plate-making, tends to lower costs. Because no solids are required, considerable ink economies also are effected.

Speed-o-matic camera: This camera with built-in exposure meter takes snapshot directly on paper without a negative. A small tank developing attachment permits the operator to snap, develop, and print pictures in less than ten minutes. Four different solutions are added to the tank. with a water rinse after each.

Stewart diaphragm control: Used with the Stewart Camera System, this device, attached directly to lens, enables operator instantly to select and adjust exact detail, middletone, and highlight stops required for any extension. Camera system tells where to set diaphragm control for desired stops. It is claimed to produce film negative equal in density to intensified wet plate.

Totalux: The length of camera exposures is controlled according to actual light falling on copy. Installed on copyboard, this device measures strength of illumination given off by camera lights during entire exposure.

Tru-lock system: This device for locking up printing forms for electrotype foundry claims to eliminate the chase and excessive furniture. Using four precision machined steel bars that interlock tightly at the corners around the form, it is adaptable to variations in form sizes. It is said to take less than one minute for lock-up, in contrast to usual 15 minutes or more.

Vandercook wet proving machine: In one operation, plates are inked immediately ahead of the impression, producing wet proofs, simulating procedure on actual printing presses. Sheet is fed to grippers on single impression cylinder, registered for margins only. Cylinder and inking units travel over plate beds at speed comparable to production presses. Inking units are tripped over all but one plate. For progressive proofs, impression cylinder may be tripped over any of plates. For two- and four-color wet proving.

Vectography: In this three-dimensional still photographic process, two exposures are taken at slightly different angles. The two negatives are specially processed, resulting in a print that resembles a double exposure or one that suffered a movement in the making. The print is viewed through the special Polaroid spectacles to obtain the third-dimensional effect. Any standard camera may be used for making the two exposures.

Reproduction on vinyl plastics: In this improved method of drafting, reversal (negative to negative or positive to positive) line and halftone images can be reproduced in such vinylite base plastics as Dyrite, Loftrite, Virginia Plaque, or Dinobase. Translucent vinyl base is scrubbed with pumice to facilitate adherence of coat of deep etch sensitizer. It then is backed with black paper, exposed, developed, and dyed in the usual manner, and deep etch stencil removed. A combination of dyes produces a neutral black with an opacity equal to the silver deposit on a graphic type emulsion. The black dye image can be converted selectively to a nonphotographing blue an advantage in correcting or revising maps.

Visible line typewriter: This electric typewriter eliminates typing errors, operating on the principle of printing an entire line simultaneously. As a line is typed, or "set up," it becomes visible above the keyboard. If correct, the entire line is printed by pushing a button. If errors occur. the carriage is returned to its original position and the error corrected. The line is justified to both margins. The machine warns the operator how much space remains at the bottom of the page. It has a standard keyboard and interchangeable type faces.

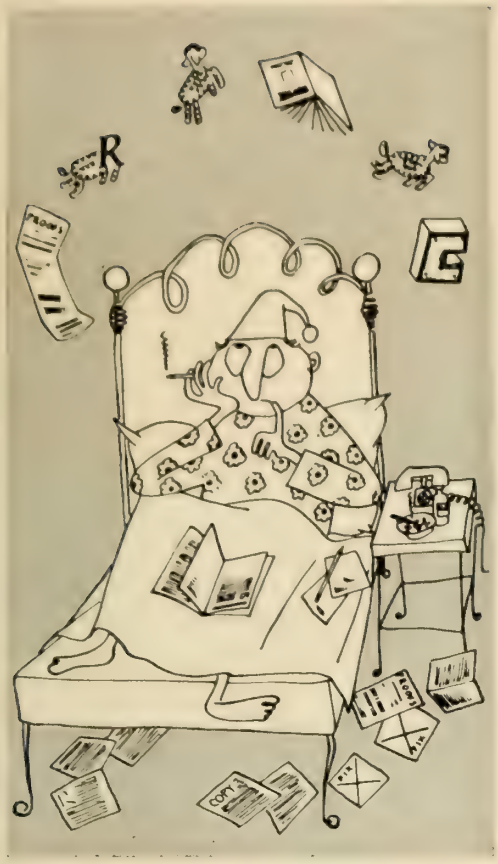
Vitaprint process: This method for reproducing photographs in large quantities at low cost combines fine plates, special inks, and precision makeready and press work. Prints have high gloss coating that can be cleaned with a damp cloth, contain very fine halftone screen. They are used for many advertising purposes, including fan pictures, post cards, direct mail enclosures, and window and counter displays.

Webtip: This machine places inserts into newspapers. Flat sheets preprinted on any grade of paper by any process are inserted and glued, in register and at any press speeds. Some newspapers are using this method to combine color inserts with their regular editions.

Wilglo process: A luminescent method of letterpress printing (the printed areas glow in the dark), this uses special fluorescent and phosphorescent inks and powders. Developed during the war largely for use on air service maps, it may now be used for a variety of novelties, displays, labels, and theatre programs.

Wirephoto, All-purpose: A transmitter is now being installed by the Associated Press that will send pictures on low frequency circuits and correct for distortions caused by delayed frequencies and photographic processing, thereby transmitting high fidelity copy. The service will be of particular value to spot news photographers who formerly had to rush their negatives in by courier or plane or be faced with the possibility of inferior reproduction due to transmission distortion.

Wood pre-registering machine: This is a high-speed system for exact register and trimming of two-, three-, and four-color plates before they reach the newspaper pressroom. The operator sets points to register the key plate, then trims it. Subsequent color plates are set to the same points and trimmed. Inaccurately cast plates are immediately discovered. The machine is said to require no changes in present stereo casters and newspaper presses.



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Press specifications

Performance data listed for wide variety of letterpress, lithography, gravure, and aniline equipment used for black-and-white and multicolor work

David R. Perazzo, Jr.

The accompanying tables supply a familiarity with all press specifications that is advantageous in securing the best bid for a specific job. They also aid in determining process to be used and help in tailoring a job to the most efficient available press equipment.

The figures here are an index, not the whole story; they are manufacturers specifications. With actual running conditions, different types of forms, lightweight or poor quality paper, and various methods of sheet delivery, sheet size and production in many cases will not approach that given.

Because any printing job may be handled quickly and economically in so many ways, it is unwise to confine bids to those printers having the exact equipment which the work appears to require. Instead, these specifications can best be used by relating them to the equipment of the three general classes of printing plants:

1. The publication, catalog, and book printer, almost all of whose equipment will be 38 x 50 or larger, with possibly one or more 25 x 38's. He will have, too, one or more small two-color presses for process work, and several 12 x 18 automatics for covers, reprints and jobs.

2. The general commercial printer will have more diversified press equipment; 25 x 38 one and two-colors, 12 x 18 automatic cylinders; he may also have one or more 38 x 50's, and some specialized equipment such as envelope presses.

3. The small job printer, handling short runs of letterheads, announcements and cards, will have platens from 14 x 22 down to 6 x 9. One or more of these may be automatics.

A knowledge of the equipment of one or more printers in each of these classifications, and, whenever possible, discussion with the printer in the planning stages, will assure the buyer that his printing is being placed on the proper equipment for the most economical and expeditious production that is possible.

Letterpress: platen

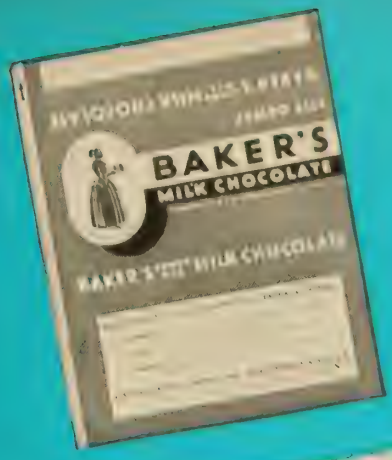
	Maximum sheet	Minimum sheet	Ptg. area	Rated speed
*Golding Pearl No. 8	5 x 8	2 x 3	5 x 8	2,600
*Golding Pearl No. 11	7 x11	2 x 3	7 x11	2,600
*Golding No. 6	8 x12	2 x 3	8 x12	2,500
Chandler & Price New Series 8x12	8½x11½		8 x12	3,000
*Golding No. 7	10 x15	2 x 3	10 x15	2,500
Heidelberg Ultra-I	10 x15	2 x 3½	10¼x13⅞	5,000
Chandler & Price Craftsman 10x15	11 x15½	1⅜x 3⅜	10 x15	3,600
Chandler & Price New Series 10x15	11 x15½		10 x15	2,700
*Miller Master Speed Jobber	11¼x17¼	3¼x 5½	11½x17½	3,200
Kluge Automatic 10x15	12 x16	2 x 3	10¼x15½	3,500
Colts Armory 2 B	12 x16¾	2 x 3	13¾x19¾	2,000
*Golding No. 18	12 x18	2 x 3	12 x18	2,200
Chandler & Price Craftsman 12x18	13 x19	1⅞x 3⅜	12 x18	3,000
Chandler & Price New Series 12x18	13 x19		12 x18	2,500
Heidelberg Ultra-II	13 x19	2 x 3½	12⅝x17⅝	3,500
Heidelberg Main Superspeed	13 x19	3 x 4	12⅝x17⅝	3,300
Kluge Automatic 12x18	14 x19½	2 x 3½	13 x19	3,000
*Golding No. 21	15 x21	2 x 3	15 x21	2,300
Laureate	16 x23¼	2 x 3	14 x22	2,500
Chandler & Price Craftsman 14½x22			14½x22	2,600
Chandler & Price Craftsman Automatic Unit 14½x22	16 x23¼	3 x 5	14½x22	2,600
Chandler & Price Heavy Duty Craftsman 14½x22	16 x23¼	3 x 5	14½x22	2,300
Chandler & Price Super Heavy Duty Craftsman 14½x22	16 x23¼	3 x 5	14½x22	2,300
Chandler & Price New Series 14½x22			14½x22	1,800

Letterpress: platen, cont.

	Maximum sheet	Minimum sheet	Ptg. area	Rated speed
Colts Armory 5C or 6C	16 x23¾	2 x 3	14 x22	2,000
Thomson	23 x33	10 x15	22 x32	2,200
Thomson-National Quarto Medium			10 x15	2,000
Thomson-National Half Medium			13 x19	1,800

Letterpress: high-speed cylinder

	Maximum sheet	Minimum sheet	Ptg. area	Rated speed
Multipress Model F (FM)	9 x12	2¼x 4	8⅞x12	6,500
*Webendorfer Little Giant	9 x12	3 x 5	8½x11	3,500
Chandler & Price No. 1	11 x15	3½x 5½	11 x14	4,800
*Webendorfer Little Giant	11⅝x16½	3 x 5	10 x15	4,000
ATF Little Giant No. 4	12 x18	3½x 5½	11¾x17½	3,500
ATF Little Giant No. 5	12 x18	3½x 5½	11¾x17 7/16	4,000
Chandler & Price No. 2	12¼x18½	3½x 5½	12 x18	4,800
Banthin Cylinder	13 x20	3 x 5	12¼x19	3,600
Miller High Speed	13 x20	4 x 7	12 x19	5,000
*Kelly Jobber	13 x20	5 x 8	12½x19	4,500
*Miehle V-36	13½x20	3½x 5½	12¼x19	3,600
*Miehle V-45	13½x20	3½x 5½	12¼x19	4,500
*Kelly A	13½x20	5 x 8	12¾x19¾	4,500
Miehle Vertical V-50	14 x20	3¼x 5½	12¼x19	5,000
ATF Kelly Clipper	14 x20½	3½x 5½	12½x20	5,000
ATF Kelly B	17 x22	7 x10	13⅝x21	3,600
ATF Kelly C	17½x22½	7 x10	17¼x22	4,200
Miller Simplex	20 x26	8½x11	19 x24	4,500
*Whitlock 6 E	21 x27		19 x25	3,500
*Miehle Horizontal	22 x28	8½x11	19¾x26	3,600
Miehle No. 29 Letterpress	22 x28	8½x11	20¼x26	4,500
ATF Kelly No. 1 Automatic	22 x28	8½x11	22 x28	3,600
ATF Kelly No. 2 Automatic	24 x35	8½x11	24 x35	3,000



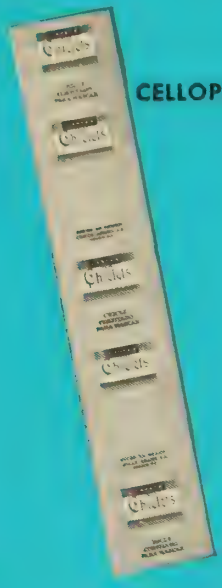
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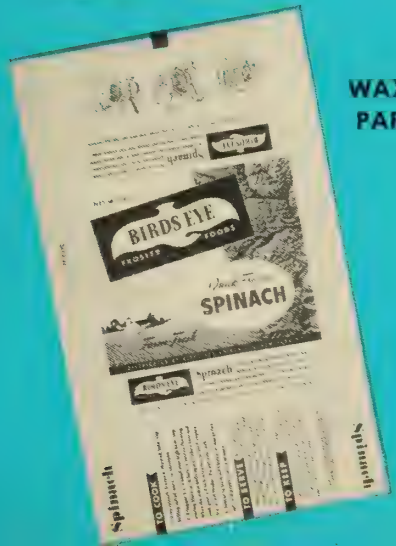
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rotogravure at its best

Speedry



Letterpress: one-color cylinder

	Maximum sheet	Minimum sheet	Ptg. area	Rated speed
*Harris H C	22 x30	9 x12	20 x28½	3,600
*Miehle Pony	22¼x34	11 x17	21 x30½	2,850
ATF Kelly	23 x29	8½x11	22¼x28½	4,200
*Whitlock 4-E	23 x34		21½x32	3,000
Lee No. 38	24 x36	6 x 9	22 x35	2,500
*Babcock Optimus & Automatic No. 35	24½x35	11 x17	22 x32	3,000
*Whitlock 3-E	25 x38		23 x36	2,600
*Miehle No. 4/2 R	25½x39½	11 x17	24 x37	2,600
Lee No. 42	26 x40	6 x 9	25 x38	2,000
*Babcock Optimus No. 41	26 x40	11 x17	24 x37	2,800
*Babcock Optimus & Automatic No. 43	26 x40	11 x17	24 x37	2,500
*Miehle No. 4/3 R	26½x41½	11 x17	24 x38	2,500
*Premier GF	27 x40½		25 x37	2,280
Miller Major	27 x41	11 x17	25 x38	4,000
*Miehle No. 4/4 R	28 x40½	11 x17	24 x37	2,400
Miehle No. 41 Automatic	28 x41	16 x19	24 x38	3,000
*Babcock No. 5 Optimus & Automatic	28½x41½	11 x17	24½x39	2,400
*Premier GI	30 x41		35 x45	2,160
*Miehle No. 3	32 x45½	16 x19	28 x42	2,250
Babcock Optimus No. 6	32 x45½	16 x19	29 x43	2,400
Miehle No. 46	33¼x45½	16 x19	29 x42	2,800
*Miehle No. 2	34 x49½	16 x19	30½x46	2,100
*Premier GO	35 x47½		33 x44	2,040
Babcock Optimus No. 7	35 x50½	24 x24	31 x48	2,000
*Miehle No. 1	38 x52½	24 x24	34½x49	1,950
Babcock Optimus No. 10	39½x54	24 x24	37 x51	1,850
*Premier GU	40 x51½		38 x48	1,800
*Miller SK	40 x52	11 x17	38 x49	3,250
*Miehle 2/0	41½x55½	24 x24	38 x52	1,850
*Premier GW	42 x55½		40 x52	1,740
Miehle No. 56 Automatic	42 x56	19 x25	38 x52½	2,250
Babcock Optimus No. 11	43 x61½	24 x24	40 x59	1,750
*Miehle No. 4/0	45½x61½	24 x24	41 x58	1,750
*Miehle 5/0	45½x64½	24 x24	41 x61	1,750
Babcock Optimus No. 12	45½x64½	24 x24	42 x62	1,750
*Premier GY	46 x65½		44 x62	1,620
Miehle 5/0 Special	46 x67½	24 x24	41 x64	1,750
*Miehle 6/0	49½x67½	24 x24	45½x64	1,600
Miehle 7/0	50 x73½	19 x25	45½x70	1,600

Letterpress: two-color cylinder

	Maximum sheet	Minimum sheet	Ptg. area	Rated speed
*Harris Envelope E-1 1-2 color	11 x12	2½x 3		12,000
Harris Envelope P-2 1-2 color	12⅛x20½	4 x 6		10,000
*Miehle Horizontal Tandem	22 x28	8½x11	19¾x26	3,600
*Harris TFC	22 x30	9 x12	21¼x29	3,500
Miller	27 x41	11 x17	25 x38	3,500
Miehle No. 41 TC	27¼x41	16 x19	24 x38	2,800
Miehle No. 46 TC	32 x45½	16 x19	29 x42	2,500
Miehle No. OTC	38 x55½	19 x25	36½x51	1,700
*Miehle 3/OTC	40½x61½	24 x24	40 x57	1,600
*Harris TD	43 x59	24 x24	42 x58½	3,000
*Miehle 5/0	46¼x64½	24 x24	46 x60	1,500
Miehle 6/OTC	46¼x69½	24 x24	46 x65	1,500
*Babcock	50 x72	24 x24	49½x71½	2,400

Letterpress: perfecting

	Maximum sheet	Minimum sheet	Ptg. area	Rated speed
*Miehle No. 1	37 x52½	24 x24	35 x48	1,900
*Miehle 2/0	40 x55½	24 x24	38 x51	1,800
Miehle 5/0 Perfector	45 x68½	24 x24	42½x64	1,600

Letterpress: rotary

	Maximum sheet	Minimum sheet	Ptg. area	Rated speed
Cottrell-Claybourn 5-color	29¼x45	17 x22	28¾x45½	5,200
Cottrell-Claybourn 2-color	29¼x45	17 x22	28¾x44½	5,500
Cottrell-Claybourn 2-color	36 x48	18 x24	35½x47½	5,200
Cottrell-Claybourn 5-color	36 x48	18 x24	35½x47½	5,200
*Hoe Typographic	41 x54	22 x34	40½x54	4,000
*UPM Kidder 2-sheet	42 x56	26 x35	41 x55½	6,000
Cottrell-Claybourn 5-color	43 x62	20 x30	39½x58½	4,500
Cottrell-Claybourn 2-color	43 x62	20 x30	39½x58½	5,000
*UPM Kidder 2-sheet	48 x68	26 x35	47½x67	6,000
Cottrell-Claybourn 5-color	48 x71	32 x46	47½x70½	4,200
Cottrell-Claybourn 2-color	48 x71	32 x46	47½x70½	4,500
*UPM Kidder 2-sheet	48 x74	26 x35	47½x73	6,000
*UPM Kidder 2-sheet	48 x80	26 x35	48 x79	6,000
Babcock 2-color sheet feed	50 x72		48½x70	4,000
Cottrell 5-color	50 x72	28 x42	49½x71½	4,000
*UPM Kidder 2-sheet	52 x80	26 x35	51½x79	6,000
*UPM Kidder	60 x80		60 x80	3,000

Letterpress: web-fed flat-bed platen

	Maximum sheet	Minimum sheet	Rated speed
New Era Multi-Process 6x6	7x 8	6½x 6½	8,000
New Era Multi-Process 9x12	12x13	10 x12½	7,500
New Era Multi-Process 12x12	12x13	12 x12½	7,500
New Era Multi-Process 12x18	16x19	12½x18½	7,500
New Era Multi-Process 13x20	16x24	13 x22	7,000
New Era Multi-Process 13x28	16x32	13 x30	6,000

Letterpress: web-fed

	Max. web width	Max. ptg. width	Cylinder circumference Min.	Cylinder circumference Max.	Rewind ft. per min.
Hudson-Sharp No. 3-A1	2" over ptg. width	10-60	4¼	9½	500
Champlain 1-C	13¾	13¾	9½	14	250
*Champlain 1-G	17	16½	8	16	150
*Champlain 3-G	17-20	19½	15½	26	300
Potdevin 217	20½	19½	10.05	15.08	600
Potdevin 317	21	20	10.68	21.99	517
Potdevin 617	21	20	10.68	21.99	600
Sperry Printer 20"	22	20	16-24	26-32	1,000
Smatco	22	22	17	17	235
Sperry Printer 26"	28	26	16-24	26-32	1,000
Potdevin 416	30	28	21.98	45.22	600
Champlain 2-G	30	29½	15½-23¾	22¾-31	300
Sperry Printer 30"	32	30	24	32	1,000
Potdevin 418	32	31	10.68	37.80	700
Kidder–614	37	36	24	24	7,000
Kidder–601	49	48	36	36	5,000
Potdevin 463	52	52	24	48	750
Potdevin 63	52-66	50-64	24-30	48-77	600
Willsea Multicolor	60 up	60 up	31	75	
Kidder	67	65	18	72	600
Kidder 540	73	72	48	48	600
Kidder	74	72	32	48	600
Kidder 448	82	81	48	48	600

* Manufacture discontinued; press still widely used.

† Manufacture temporarily discontinued.

[1] Can also be equipped with gravure units.

[2] Can also incorporate letterpress units to print oil inks with rubber plates.

CHECK and COMPARE

EBCO OFFSET PRESS



MORE DEPENDABILITY

- Positive Sheet-by-Sheet Reloading Type Feeder
- Positive Sheet Control from Feeder to Guides
- Pre-Register Slow-Down Guides
- Unique Patented Front Guides
- Patented Pull Side Guide
- Positive Register Detectors
- Three Point Registering Mechanism
- Skeleton Feeding Cylinder

MORE ACCESSIBILITY

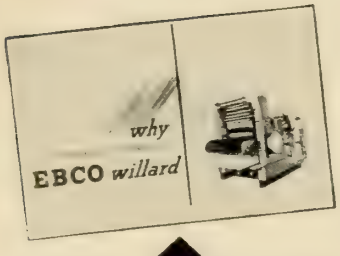
- Efficient Adequate Dampening Motion
- Accessible Sturdy Dampening Rollers
- E.B.CO Plated Water Rollers
- Inker Driven from Main Drive
- Ink Fountain Holds Ample Supply of Ink
- Cylinders Balanced on Tapered Roller Bearings
- Patented Individually Sprung Grippers
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MORE EFFICIENCY

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- Run-in and Tested at Factory
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- "V" Belt Drive from Variable Speed Motor
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- Up to 6,000 I.P.H.—Plus Less Down-Time



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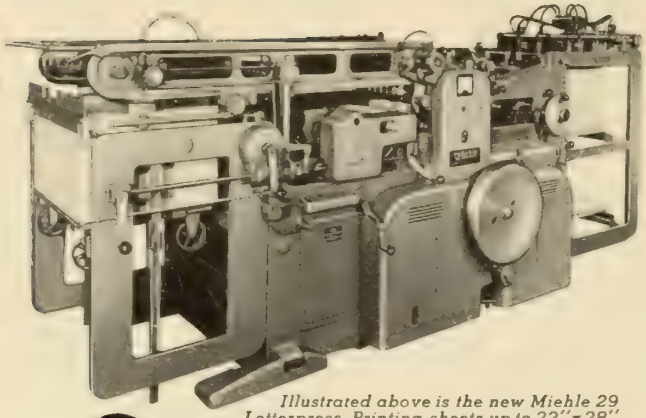
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PRINTING MACHINERY DIVISION
ELECTRIC BOAT COMPANY
445 PARK AVENUE, NEW YORK 22, NEW YORK
CHICAGO OFFICE: 400 W. MADISON ST., CHICAGO 6, ILL.

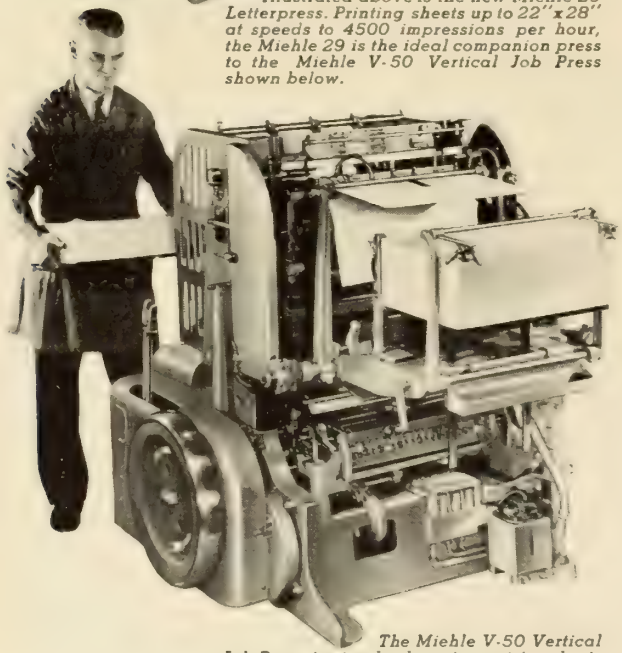
OUR THANKS to the many firms in the industry who pioneered, tested and PROVED the finer working qualities of the E.B.CO Offset Press.

print it on...

The Miehle



Illustrated above is the new Miehle 29 Letterpress. Printing sheets up to 22"x28" at speeds to 4500 impressions per hour, the Miehle 29 is the ideal companion press to the Miehle V-50 Vertical Job Press shown below.



The Miehle V-50 Vertical Job Press is standard equipment in plants throughout the world. Prints sheets up to 14"x20" at speeds to 5000 impressions per hour. High speed and easy operation. Everything from post cards to brochures practical and economical on the Miehle V-50

Get the Benefits of Miehle Quality and Economy on All Your Printing Jobs...

When you say: "Print it on a Miehle!" your printer knows you are press and penny wise.

Whether you want quality letterpress, offset or gravure printing, there are high-production Miehle Presses to handle the job. And Miehle "high production" means top quality finished work, whether you want five hundred or five-hundred thousand pieces.

Miehle builds a complete range of presses from the little Vertical Job Press that handles sheet sizes as small as 3¼" x 5½", up to the big four color Offsets and Letterpresses that handle sheets up to 52" x 76".

All Miehles are sheet-fed presses — the sure method of securing precise register on multi-color work; and clean, sharp definition on all work.

For specific data on Miehle Presses, write direct or call your Miehle Representative.

MIEHLE HIGH PRODUCTION EQUIPMENT:
LETTERPRESS • OFFSET • GRAVURE • CUTTERS AND CREASERS

MIEHLE PRINTING PRESS & MFG. CO.
2011 Hastings Street (14th and Damen)
Chicago 8, Illinois

Offset lithography: one-color, multicolor

	Maximum sheet	Minimum sheet	Ptg. area	Rated speed
Hoe Web Offset Jobber	8 x14	8½x10	8 3/16x13 1/4	30,000
ATF Webendorfer Little Chief 20'	14 x20	8 x10	13 x19 1/4	5,000
Harris 17x22 LTG single color	17 x22	7 1/2x 8 1/2	17 1/8x22 1/2	7,000
*Webendorfer 17x22 MA	17 x22	8 x10	16 1/2x21	5,000
Dutro Photochrome Dry Offset 2-4 6 color	17 1/2x22	10 x22	17½x21½	15,000
ATF Webendorfer 17x22 Chief 22	17 1/2x22	8 x10	17 x22	5,000
Rutherford 20x26	19 x25	8½x11	19½x25	6,000
McAdams Press	19 1/2x25 1/2	8 x10	19 x25	6,000
Jeep Offset Press	19½x25½	8 1/2x11	19 x25	6,000
Rutherford 20x29	20 x28	11 x14	19 1/2x28	6,000
Harris 21x28 LTC single color	21 x28	10 x14	21⅝x29	6,500
*Webendorfer 22x26	22 x26	11 x17	20 x26	5,000
Harris 22x34 LTN 1-2 color	22 x34	10 x14	22½x35	6,000
ATF Webendorfer Big Chief 29'	23 x29	11 x17	22 x28	5,000
Willard single color	23 x36	11 x17	22½x35	6,000
*Miehle No. 44 Unit Type 1-4 color	29 x43	16 x24	28½x42	5,000
*Hoe 30x42 single color	32 x43	17 x22	29¾x42¾	5,000
*Potter B 3	34 x46	16 x19	33 11/16x46	3,500
Dutro Web Offset 45½x38 1-6 color	37½x45½	22 x45½	44⅞x37	9,000
Harris 35x45 LSS 1-2 color	35 x45	17 x22	35⅝x47½	5,000
*Potter B-D 4	38 x52	16 x19	37 11/16x52	3,500
*Potter B-D 4 Special	41 x54	16 x19	40 11/16x54	3,500
*Miehle No. 57 Unit Type 1-4 color	41½x55½	19 x25	41 x55	4,500
Hoe 41x54 1-2 color	42 x55½	19 x25	41½x55	4,500
*Miehle No. 60 Unit Type 1-4 color	42 x58	24 x24	41⅝x58	5,200
Miehle No. 61 1-4 color	42 x58	22 x34	41⅝x58½	7,000
Harris 42x58 LTK 1-2-4 color	42 x58	22 x34	42⅝x58½	6,500
*Miehle No. 69 Unit Type 1-4 color	46½x67½	24 x34	46 x67	4,500
Harris 50x69 LTQ 1-2-4 color	50 x68	25 x38	50⅝x68½	6,000
Hoe 50x72 1-6 color	50 x72	25 x36	49½x71½	6,000
Miehle No. 76 1-4 color	52 x76	28 x42	51⅝x76	6,500
ATF Webendorfer, 4 color, web	30 x40			10,000

Gravure: sheet-fed

	Maximum sheet	Minimum sheet	Ptg. area	Rated speed
No. 7 L & M	11¾x19	6 x 8	11⅜x18	3,000
*Harris WM 20x26	20 x26	9 x12	19 x25	3,400
No. 5 L & M	22 x30	6 x 8	20¾x29	2,800
*Harris WN 25x28	26 x38	9 x12	25 x37	3,400
No. 4 L & M	26 x40	6 x 8	25¼x39	2,800
Miehle No. 44 Unit Type 1-3 color	29 x43	16 x19	28½x42	5,500
*Miehle No. 60 Unit Type	42 x58	22 x34	41⅝x58	5,200

Gravure: web-fed

	Max. web width	Max. ptg. width	Cylinder circumference Min.	Cylinder circumference Max.	Rewind ft. per min.
Champlain V	2¼	2	5	9	200
Champlain V	3¼	3	5	9	200
Champlain V	4 1/2	4	6½	11	250
Champlain Standard Speedry	9	8	9	18	300
Hyroto 10 1-6 color	11	10	10	30	600
Champlain Standard Speedry	15	14	9	18	300
Hyroto 20 1-6 color	21	20	10	30	600
Champlain Standard Speedry	21	20	13	26	300

Gravure: web-fed, cont.

	Max. web width	Max. ptg. width	Cylinder circumference Min.	Cylinder circumference Max.	Rewind ft. per min.
*Potdevin G 21x32	21	20	16	32	400
Sperry Printer 20'	22	20	18	36	500
*Potdevin G 26x18	26	25	9.42	18.84	400
*Potdevin G 26x28	26	25	14	28.25	400
Roto Matic	26	26	12	42	†
Sperry Printer 26"	28	26	18	36	500
Champlain Standard Speedry	28	27	17	34	300
Hyroto 30 1-6 color	31	30	15	38	600
Sperry Printer 30"	32	30	22	40	500
*Potdevin G 32x24	32	31	11.94	24.19	400
Hypromatic	34	34	17	34	600
Champlain Standard Speedry	37	36	17	34	300
Kidder Unit Gravure 1-6 color	39	36	12	36	800
Hyroto 40 1-6 color	41	40	15	38	600
Goss-Gravure	75	74	34½	55	600
Goss-Speedry	75	74	34½	56½, 72¼	1,500

Aniline letterpress

	Max. web width	Max. ptg. width	Cylinder circumference Min.	Cylinder circumference Max.	Rewind ft. per min.
Potdevin 16½x16	16½	15½	6.28	13.51	400
*Heinrich O	20⅝	19⅝	7 1/16	25⅝	800
*Heinrich 1	23	22	7 1/16	25⅝	800
Milwaukee	26	24	7	36	600
Kidder Celloprinter	26	24	8	18	500
Potdevin A 26x18	26	25	5.65	18.84	500
Potdevin A 26x18	26	25	10.05	28.27	600
*Heinrich 2	26⅝	25⅝	7 1/16	25⅝	800
Cottrell-Heinrich X	27	26	7	30	800
Heinrich A1	27½	26	7	30	800
Haida D	31	30	7	30	500
Potdevin A 31x28	31	30	10.05	28.27	600
Milwaukee	32	30	7	36	600
Kidder A30	32	30	11	36	600
*Heinrich 3	32½	31½	7 1/16	25⅝	800
Cottrell Heinrich 4	33	32	7	30	500
Cottrell-Heinrich X[1]	33	32	7	30	800
Heinrich A2	33½	32	7	30	800
Potdevin A 36x36	36	35	13	36	600
Cottrell-Heinrich J	37	36	7	48	1,000
Milwaukee	38	36	7	36	600
Potdevin A 40x36	40	39	13	36	600
*Heinrich 4	40⅜	39⅜	11¾	30¾	800
Heinrich A3	41½	40	7	30	800
Cottrell-Heinrich	43	42	7	30	500
Cottrell-Heinrich J[1]	43	42	7	30	800
Haida L	43	42	9	30	300
Heinrich A4	43½	42	7	30	800
Milwaukee	44	42	7	36	600
Kidder A42	44	42	18	36	500
Potdevin A 48x36	48	47	13	36	600
Cottrell-Heinrich J[1,2]	49	48	8	48	800
*Heinrich 5	50	49	11¾	39⅜	800
Heinrich A 5	51½	50	12	40	800
*Henschel Rotolin	53½	52	7½	31½	600
Kidder A52	54	52	18	36	600
Cottrell-Heinrich J[1,2]	61	60	8	48	800
Heinrich A 6	61½	60	12	40	800
Haida M	73	72	9	30	500
Heinrich A7	73½	72	12	40	800

* Manufacture discontinued; press still widely used.

† Manufacture temporarily discontinued.

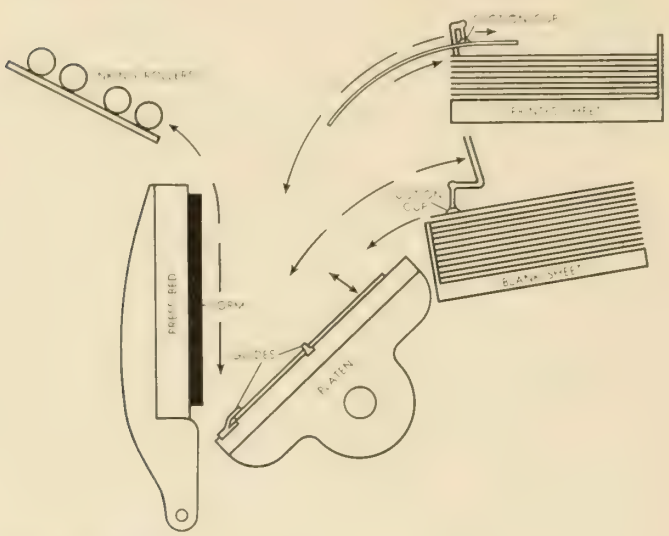
[1] Can also be equipped with gravure units.

[2] Can also incorporate letterpress units to print oil inks with rubber plates.

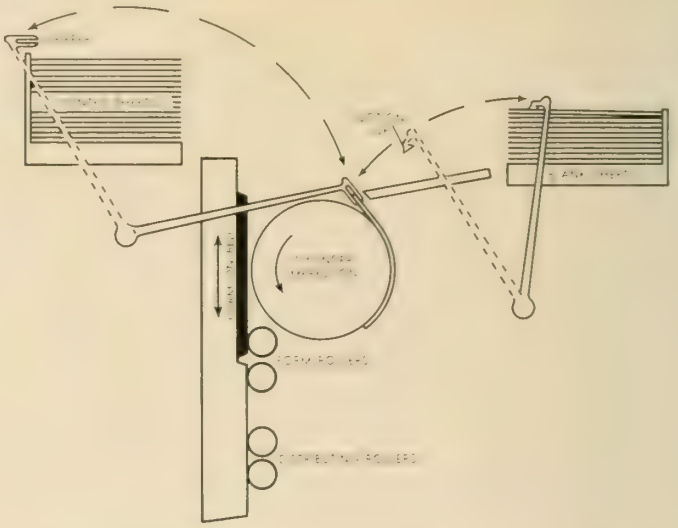
Relief printing presses

Basic principles of the main press styles including platen, vertical, single and multi-color flat-bed, and multi-color rotary and perfecting presses

Bruno Menzer

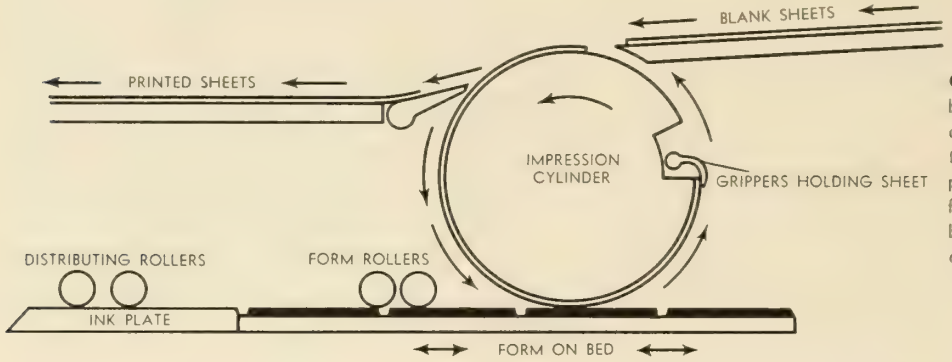


Automatic platen: Clamp holds form in vertical position. Platen rocks to parallel with bed as bed moves toward platen. Paper on platen is pressed against form, contacting whole form at once. Paper is hand- or automatic-fed against the guides on platen, which moves up and tips back to facilitate feeding. Printed sheet is removed by hand or automatically at time new sheet is fed. Automatic platen press, illustrated above, has mechanical feed and delivery. Platen press is of considerable advantage when stock is too heavy to bend around a cylinder. Among the many uses of this press are printing, embossing, stamping, diecutting, leaf-laying, and creasing. Rated max. speed: 3500 per hr.



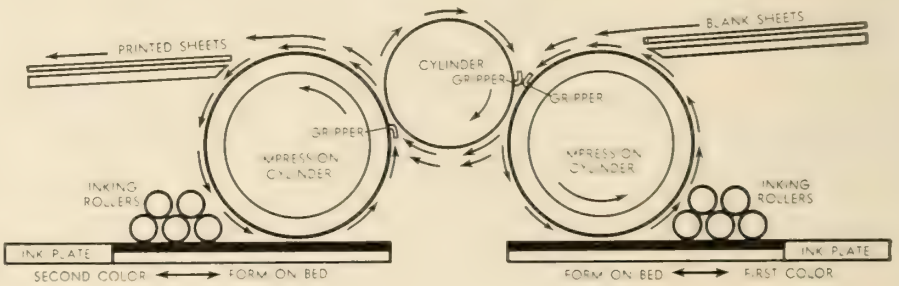
Vertical cylinder: A small, high-speed cylinder press in which flat form, in chase or on base, is locked vertically on the press, rather than horizontally as with other cylinder presses. Form moves as paper revolving on cylinder is in contact with it. Verticals rated maximum speed is 5000 per hr.

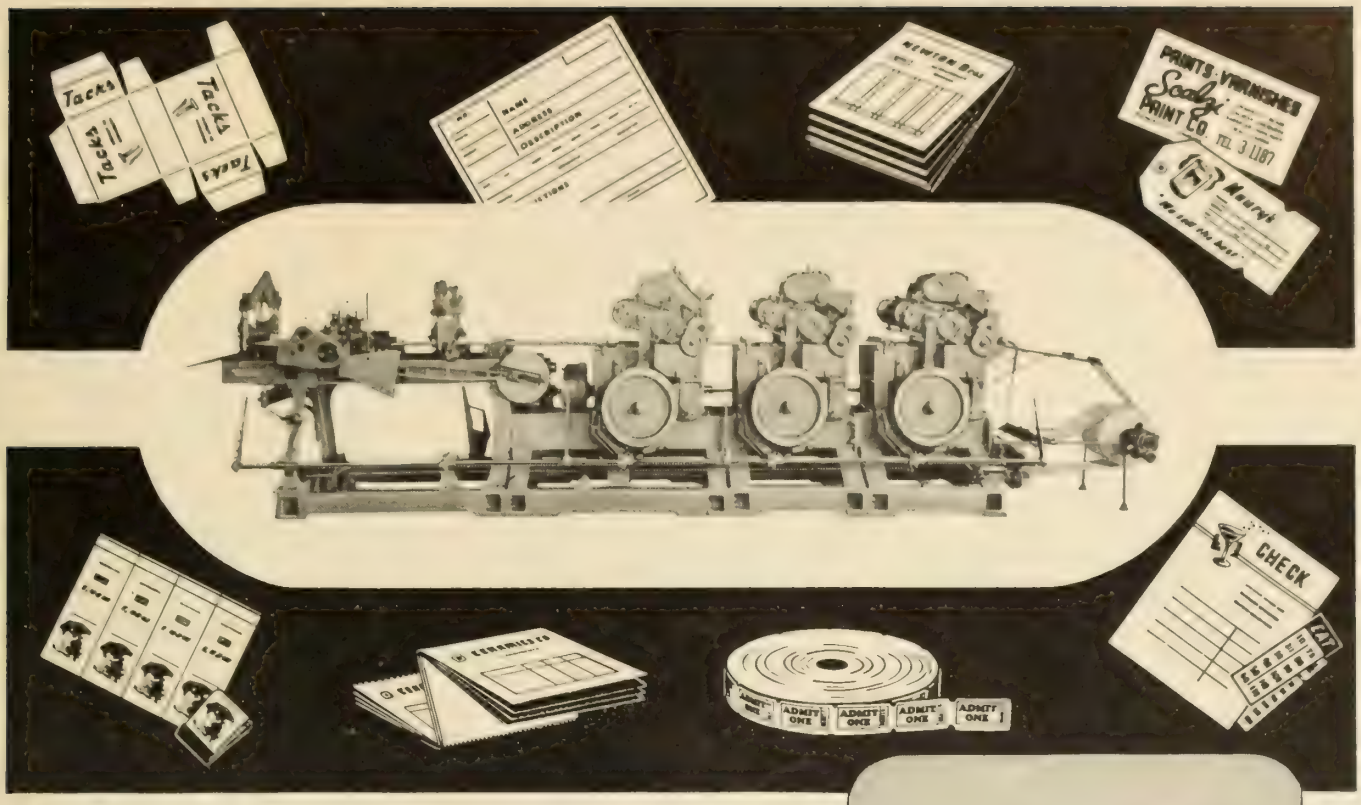
Letterpress inking: Inking on all letterpress equipment follows the same principle. Ink is transferred via rollers from a trough or fountain to form, on bed, or to plates on the plate cylinder. The rollers assure complete and even distribution of the ink and vary in number from one press model to another.



Cylinder (left): The form is locked on the flat bed of press, impression being against large cylinder. The bed travels forward and backward, the cylinder making two revolutions to one impression. The impression cylinder contacts the form while revolving. Paper is held to cylinder by grippers and in traveling around, it is pressed against the form which has already been inked.

Two-color cylinder (right): Intermediate cylinder transfers paper to second impression cylinder so that same side will be printed on. This press, like the cylinder, prints from flat plates or type, uses either a chase with type and mounted plates or a base with unmounted plates and is widely used in printing of two colors wet, in four-color commercial printing.





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One press -- NEW ERA

The New Era Multi-Process Press is a flat bed web press, designed for specialty printing as well as for general commercial printing.

Using hand- or machine-set type, engravings, electrotypes, plastic or rubber plates, the New Era Multi-Process Press prints one or more colors, on one or both sides of a web. Handles gummed paper, cardboard, cloth, or heat-sealed paper and board at speeds up to 7500 impressions per hour. Attachments perforate, number, punch, die-cut, score, slit, reinforce, and eyelet—all in one passage of the stock! Finished job is delivered sheeted, zig-zag folded or rewound as desired. Once through the press completes the job!

For full details on the New Era Multi-Process Press send for Bulletin No. 11.

NEW ERA MANUFACTURING COMPANY
375-11th Ave., Paterson 4, N. J.

2708

OTHER NEW ERA EQUIPMENT

COLLATORS
for automatic collating of continuous zig-zag and snap-out forms (up to 7 paper and 6 carbon webs).

TABULATING CARD PRESS
for printing and cutting corners of cards at speed of 15,000/Hr.

CARBON PROCESSING MACHINE
for processing carbon paper for unit sets (6,000 folds/Hr.).

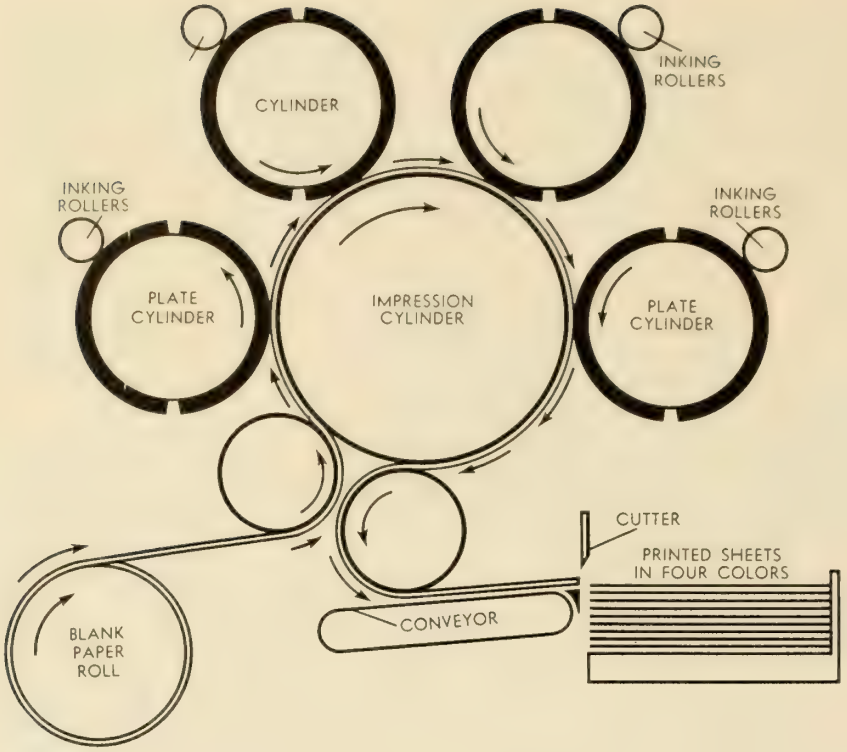
TAG PRESS
for producing tags of paper or cloth, with patch and eyelet (15,000-45,000/Hr.).

TAG STRINGER & LOOPER
Threads and loops tags at speed of 5400/Hr.

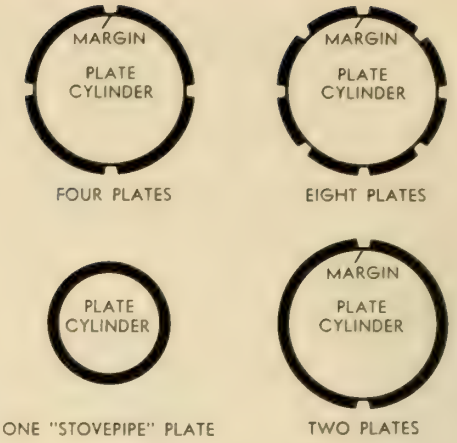
TAG STRINGER & KNOTTER
Strings and knots booklets and tags at speed of 5500/Hr.

TAG WIRING MACHINE
Attaches wires to shipping tags.

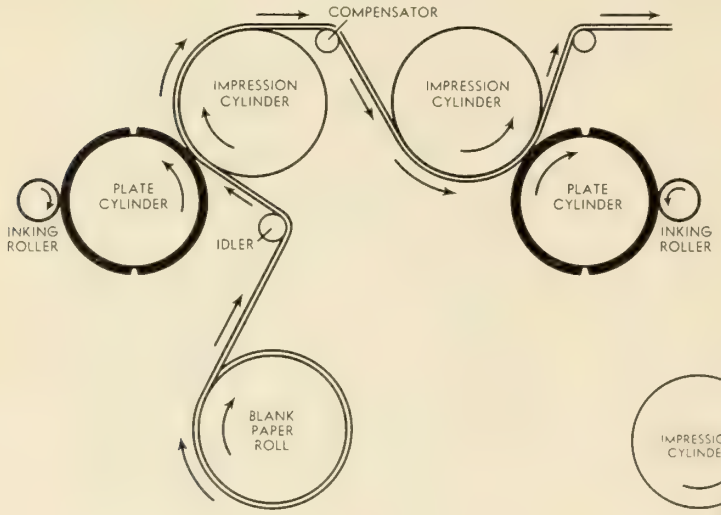
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FORMS • ZIG-ZAG FORMS • MATCH BOOK
COVERS • CHECKS • SMALL CARTONS



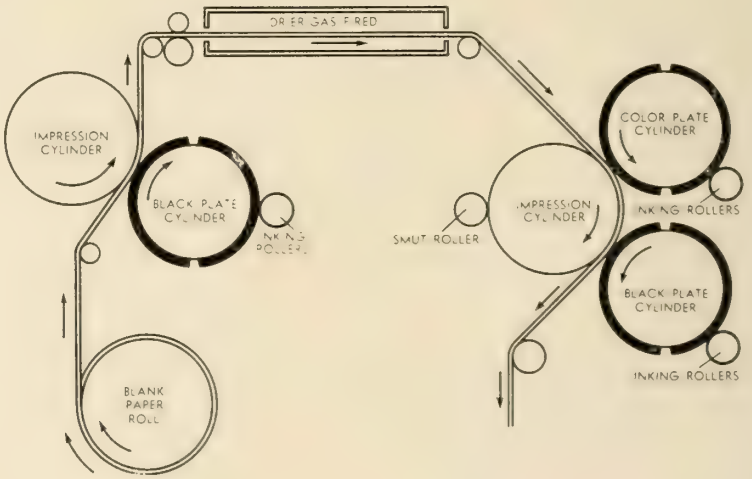
Multi-color rotary: As in the rotary perfecting press, printing is done from curved plates, usually duplicates, wrapped around the plate cylinders. The paper can be fed in either sheet or roll form, and delivery can be rewound roll or it can be slit into sheet form. Used for job and magazine printing in four colors, some of the multicolor rotary presses are made to print 5,500 copies per hour. Sheet sizes range from a minimum of 28x29¼ to a maximum of 60x80.



Rotary press plates: The "stove pipe" plate around the cylinder is a stereotype that is used for newspaper printing. The arrangement of two plates around the cylinder is usually for newspaper work also and the plates employed are generally stereotypes. When three or more plates are locked on the cylinder, magazine, book, or job printing is being done and printing is customarily performed from curved electrotypes.



Perfecting (below): Illustration shows a typical magazine arrangement both web-fed and sheet-fed. Additional cylinders for additional colors are at either end. Other installations include (a) two colors first side, two colors back-up; (b) two colors first side, four colors back-up; and (c) with instantaneous-drying inks, four colors first side, four colors back-up. Special heaters are installed for each side of press.



Rotary perfecting (above): Printing is done from curved plates, usually duplicates, which are wrapped around the plate cylinders. Paper is fed in either web or roll form. Perfecting press prints on both sides of the web in one run. Delivery can be in rewound roll, sheets, folded signatures, and perforated, numbered, etc. Recently developed photoelectric device preserves hairline register by keeping web in line. Used widely for magazine and newspaper printing.



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SEVENTEEN MAGAZINE

313 West 37th Street New York

Trapping of inks

Tack of ink is considered a vital factor in controlling successful trapping and superimposing of colors, especially in high speed wet printing

Albert E. Sterner

Trapping is the property of printing ink that makes it possible to superimpose one color on another, using yellow, red, blue, and black inks. Since good trapping is a necessary requisite for the proper superimposing of colors, all details affecting this factor should be carefully controlled to obtain the best results in the reproduction of copy.

Each color that is printed must present a suitable printing surface for the succeeding colors. The tack—stickiness—of ink is the important factor in this connection. The first ink printed should be the tackiest; each succeeding ink must have less tack than the preceeding one. This prevents the color then being printed from picking up any of those previously deposited on the paper.

Differentials are vital

The tack differentials between colors are important in controlling trapping. The differentials are governed by the upper and lower tack limits; the upper limit is set by the surface of the paper, the ink being made as tacky as possible without lifting the face or pulling the fibres from the surface of the paper.

Other factors being equal, a tacky ink covers the dots on the printing plate better than a less tacky one, so the idea is to keep the tack of the last ink as near that of the first as possible and still maintain the necessary tack differentials between all colors.

Factors other than paper that have a bearing on the amount of tack needed are press, process, and thickness of ink film. The ink-maker will consider all these, and unless he knows from previous experience just what is needed, some experimenting will be necessary to determine the best tack differentials.

There are many ink manufacturers fully competent to set up such ink standards. Once standards have been adopted, they should not be changed except by the ink-maker. The manufacturer produces these inks under close supervision and laboratory control, selecting materials so that a set of inks will print well together. There should be no adjusting performed except under his supervision.

It is important that standards be established and equally important that they be maintained. Testing instruments have been built so that there are now ways of measuring and recording tack.

It has long been known that the amount of each ink used in making progressive proofs influences the trapping. In production runs, inks from the same batches have been used to print four different subjects on the same press with the same rollers and on the same roll of paper, and three will print well and the fourth will not trap properly.

A study of the subject that is not trapping properly often shows variation from normal in the volume of ink used in proofing. Investigation of this situation brings out the fact that tack varies considerably with the volume of ink. Therefore, it is necessary to control the amount of ink used in making the progressive proofs in order to obtain results that can be duplicated in press runs.

If a plate is underinked, the solids do not print up and paper shows through. Some of the dots will not be covered and the printing will be rough. When an excess of ink is used, the dot areas of 90 per cent gray tone value fill in, and in these areas the volume of ink is increased by the depth of this filled-in area. The tack relationship is thrown out of balance, spoiling the trapping.

The usual way of determining the "normal volume of ink" can be demonstrated with a plate made up of a solid band and several screen bands, graduated from a solid to highlight areas. The amount of ink should be sufficient to cover the solid areas completely but not enough to fill in the small white dots of the 90 per cent gray tone value screen. Proofs can be made using this amount and kept for comparison purposes.

When making progressives of any subject, a solid strip and graduated screen can be placed at the end of the plate and printed when the proof is made. By comparing the solid and screen areas of these with proofs showing the normal amount of ink, it can readily be seen whether the proofs are underinked or overinked.

Overinking manifests itself in several ways. For example, it can cause pattern printing and greasy printing. In "wet" production printing, it may cause the yellow to "carry over" or "back trap" the red, so that reds go yellower, or the red may "carry over" or "back trap" the blue, causing blue to become too red, or the blue may "carry over" to the black. In four-color wet printing the "carry-over" is least objectionable when the rotation of printing is yellow, red, blue, and black; this is the reason why that order is generally used.

Since the inks are made and tacks adjusted for normal volumes of ink, the need for using normal volumes of ink when proofing is obvious.

Generally speaking, there are three methods of multicolor printing. In the dry method, each color is printed, then allowed to dry or set before the next color is applied. In the wet method, the colors are printed one after the other in quick succession without having any opportunity to set. The third is a combination of these two, in which two colors are printed and allowed to dry, and the remaining two colors are printed later.

Degrees of difficulty

The dry method causes the least trouble from the trapping standpoint, for inks trap much better if a time interval is allowed between the printing of each color. Four-color wet printing gives the most trapping trouble. The time interval here is a matter of seconds, so under no circumstances should any color be allowed to set before applying the next color in proofing, and the shorter the interval the more nearly will the proof approach the results of printing.

To sum up, satisfactory trapping results can best be obtained if the progressive proofs are made with standard inks of proper tack, each color proofed with the normal amount of ink, and proofs prepared under conditions as nearly like actual printing as possible.

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Bettye Stout

In variety, the ink-maker's product has increased to meet almost every conceivable requirement set forth by the user. Following are just a few of the many extremes asked for in printing inks:

Inks that dry slowly to inks that dry instantly, inks for hard surfaces to inks for soft surfaces, thin inks for newspapers to thick inks for lithography, transparent inks to opaque inks, inks that will bleach to inks that are fast to light, dull inks to glossy inks, black inks to inks that match every hue in the color circle, and inks that are alkali-proof to inks that are acid-resistant.

Up to about a hundred years ago, little color was utilized, and almost without exception printers used black ink made, as it is today, from lampblack, or one of the other carbon blacks, ground in linseed oil. For a quick and simple understanding of modern printing inks, it is necessary to be familiar with their three essential factors: pigment or dry color, varnish or vehicle, and dryers and compounds.

Dry colors are selected for their ability to do the job required. Some are suitable for both letterpress and offset, while others are most unsuitable for offset and may only be used for letterpress. Inks are designed, too, where they must withstand grease, wax, butter, oil, soap, alkali, acid, sulphur, brine, alcohol, acetates, and so on. Color strength and light-fastness are other factors.

The resistance of a dry color to any of the above materials is a characteristic inherent in that color. Hence, the ink-maker selects pigments for the job that will withstand the tests prescribed for it and yet be a workable ink.

Standard tacking

There is as yet no generally recognized standard to express degree of light-fastness. An ink is described as "not fast to light," "fairly fast," "excellent fastness" or "commercially permanent." All colors will change on exposure in time.

The printing press transforms a mass of ink into a printing film and deposits it on a sheet of paper. To do this properly, all factors—the ink, press, paper, plates, and pressmanship—all must be in perfect balance.

The surface of the printing plate may be defective; the paper may be poorly coated or finished; the rollers may be hard, water-logged, or improperly set on the form, or the makeready may be poor or improperly adjusted. If these details have been checked, and found satisfactory, then the trouble may be the result of not selecting the right ink for the particular job that is to be done.

Ordering inks

The ink manufacturer will be able to serve the buyer best if the following information is supplied when the ink is ordered:

1. The style of press on which the job is printed. Different types of presses require different bodied inks.

2. The kind of paper on which the job is to be run, with sufficient sample submitted for proofing. Various papers have different surfaces, and the tack of the ink must be made suitable.

3. The sequence in which the colors will be run, for there is the question whether the ink be transparent or opaque for overprinting.

4. The time between the first and second run, if the job is to be printed both sides.

It is not idle curiosity that makes the ink-maker ask these questions, for he knows that with this information at hand he can do a better job of formulating an ink to meet the requested requirements. Without the buyer's help in this direction, he must do a certain amount of guessing; perhaps he will be right, and perhaps wrong, but right or wrong guessing can be expensive as well as unsatisfactory.

Evaporating inks are of two major classes. The heat-set inks use a binding resin in a solvent such as a mineral oil fraction that is essentially nonvolatile at room temperature but very volatile at high temperatures. The other class includes aniline and gravure inks that make use of a variety of volatile solvents with binders of various types.

The development of these quick-drying inks met the challenge of high-speed production of rotogravure in rotary publication printing. With the elimination of the traveling tympan, press speed has been increased, printing is sharp, and the printed matter is available for distribution at once.

The solvents in heat-set inks are vaporized as they pass through a heating chamber, leaving the pigment and binding resins fixed to paper in such a manner that there is no chance for spread or for excessive penetration into the paper. As the heat is automatically controlled by the speed of the web of paper traveling through the press, the only limit to printing speed is that imposed by press design.

While these inks have been widely accepted, there are several factors that should be considered. The heat required for quick drying sometimes dehydrates the paper, and may cause register trouble and other difficulties in the subsequent fabrication or binding processes. Heat-set inks have a tendency to dry on the plates and rollers if the press is idle a relatively short time.

In commercial color process printing, three colors in pigments that cannot be produced by mixing are employed, from which other colors may be produced. These are yellow, red, and blue, and are known as three-color inks. The tones and shades of each of these vary greatly as made by different manufacturers, because of the different formulas used.

Mixed colors

When any two of the process colors are mixed, regardless of the proportion of each color used, the combination is known as a mixed color. This includes the various shades and tones of yellow-red, green, and purple.

In dry process printing, each color is dried, or nearly so, between runs.

The wet method of process printing is



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Selection of ink depends upon whether the process is to be letterpress, lithography or gravure; on the type and speed of the press, the kind of paper, and on the purpose of the job.

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popular with magazines of large circulation, using two-color presses and printing in two, three, or four colors with transparent inks. Other presses used include two-color flat-bed cylinder, multicolor web perfecting, and various multicolor sheet-fed rotary presses.

The process inks used for four-color wet printing on multicolor presses should have maximum strength of color, so that they may be run with the minimum amount of ink. The first color down is heavier and tackier than the following colors.

Perhaps no type shows the progress in the improvement of inks more than gloss inks. It was not too difficult to make an ink that would have the desired gloss finish on work where only one color was involved; but to make an ink where two or more colors were concerned, and where there was some overprinting, called for extensive research.

Inks that give a high gloss finish are now running on all types of presses, including the five-color press, from carton quality to halftone and process standards.

In practically all gloss inks, the gloss is obtained through the construction of the varnish content. Some pigments will produce a better gloss than others, even in the same varnish medium, so the inkmaker selects not only the best type of varnish, but also the best type of pigment to incorporate in his varnish to produce the best effect.

The longer a moist film of any kind remains on an absorptive surface, the more tendency there is for penetration. Thus, for the best results, all gloss inks should dry rapidly, but not by the application of heat. Slip-sheeting should also be avoided when running gloss ink, as both this operation and heat may mar the printed surface.

Gloss inks have been formulated for a great variety of printed and lithographed items—packages, labels, magazine covers, inserts, posters, and many types of commercial jobs. The gloss inks of today add a new dimension of texture by providing a brilliant, lustrous surface comparable with a fine varnished job—all in one impression.

The first development of nonrub and nonscratch inks was brought about primarily by the printer's desire to produce a fine piece of halftone printing that would not be ruined in folding, mailing, or handling.

The success of these nonscratch inks prompted the demand for container inks, in a wide range of colors, possessing nonrub and nonsmear qualities. Ink manufacturers have met this demand by formulating inks that work clean and bind hard on endless varieties of paper and board stock.

This means that cartons printed with these nonsmudge inks will successfully pass through the operations of scoring, folding, glueing, etc., and will stand up well under the rough handling of modern merchandising methods.

When running most nonrub inks in two or more colors, it is generally recommended that succeeding colors be printed before preceding inks are too dry, to avoid the second color's being easily marred. However, with the development of moisture-set inks, overprinting may be done several weeks later if production requires.

Long runs of ordinary nonscratch inks tend to put a glazed surface on rollers that prevents the rollers from "breathing" and renewing their surface. Rollers should be washed perfectly clean at the end of each day. Where presses are running night and day with these inks, two sets of rollers should be used, alternated every twenty-four hours. When these inks are used, press wash-ups are reduced to a minimum. For instance, if they "set up" on an idle press, the ink will be quickly and completely redissolved by running on a fresh batch of inks and turning the rollers.

Metallic inks

Metal, the keynote of modern design, and color, the accent of today's art, have been combined in ink with a gold or silver sheen. The warmth and brilliance of color added to the rich, lustrous sheen of metal offer immense possibilities to the creative printer and advertiser.

Metallic finish inks are most effectively used to give a new note to solid areas and to produce unusual results when printed from halftones. Coated stocks offer the best printing surface for such ink. The gold finish comes in two shades, pale and rich, while the silver is available in twelve tones.

The steam-set inks are a new and fundamentally different type, consisting of a pigment or pigments, and a vehicle (or varnish) composed of a newly developed special synthetic resin and an odorless organic solvent having a high boiling point. The small amount of moisture present in the air is usually sufficient to harden the outer surface of a thin, freshly printed film of this ink in ten to 30 minutes. When an excess of moisture in the form of steam is impinged on the outer film surface, it hardens immediately. Wide variations in body and working properties can be obtained in these inks to make them suitable for many different papers, presses, and processing operations.

While this ink has many unusual advantages for ordinary printing, it is especially valuable in the package printing field because it is completely devoid of odor on the printed sheet. Not infrequently, entire shipments of packaged foods have been rejected because the material packed had absorbed an objectionable odor from the ink used on the container. This printing ink that dries without any residual odor eliminates the possibility of deleteriously affecting the contents of the package.

Cold-setting inks depend upon a hot-melt process which requires that the fountain, steel ink rollers, and plate cylinders that come in contact with the ink be heated above the flow point of the solid ink. When the ink comes in contact with the relatively cold paper, it solidifies to form a dry film.

As commonly formulated, these inks are not particularly hard, and the cost of remodeling presses to provide for hot printing precludes their use in a number of applications.

Several years ago aniline inks were produced by dissolving suitable aniline dyes in alcohol and adding the necessary ingredients to make an ink that had both printing and binding qualities. It was found to be particularly suitable for paper bags, and to some extent for envelopes and bread wrappers. Material to be printed is usually fed from the roll through a press that uses rubber printing plates.

Modifications of this ink were produced by adding opaque pigments, and today it is made with pigments containing little or no aniline dye. This new type of aniline ink, produced with the same inorganic or organic dry colors used in the manufacture of oil inks, represents such a substantial improvement that new vistas are being opened for this field of printing. It dries almost instantly on paper at high web speeds and runs clean on the press.

These pigment-produced "aniline" inks, when properly compounded, possess high gloss, fastness to light, moisture, and food fats; and are nonbleeding in cellophane or paper adhesives. They come in a wide range of colors, including yellow, orange, red, green, blue, black, and white. Transparent, opaque, and

semi-opaque pigment-produced "aniline" inks are adaptable for printing on kraft or white paper, and cellophane or other transparent films.

The best grade of newspaper ink is made from carbon black, resin varnish, and a small amount of toner. Cheaper grades are made from carbon black with petroleum as a vehicle.

In the last few years there has been a marked improvement in the making of newspaper inks, with the result that they are stronger in color and have better flowing properties, with printing quality improved most noticeably at the higher speeds demanded today.

News ink can never be said to be actually dry, as it depends on the absorptive power of the paper to give it a more or less smudge-proof film.

This year, the trend is to color in newspaper printing. Throughout the United States, more than 400 newspaper plants are equipped to handle color—some only one color with black, others two or three colors with black.

Because of the radically different properties of the pigments, the formulation of news ink colors has been a most complicated procedure requiring intensive research and testing.

The offset method of applying ink to paper is so different from letterpress that it naturally entails the use of different materials and construction. The vehicle or varnishes used must be selected from the group that are not miscible with water and will not have any injurious effect on the offset blanket. Linseed varnishes are still the most commonly used, but other oils bodied with some of the new synthetic resins have found an important place.

Pigment colors are similar to those in other types of ink, but are usually much stronger in color value. This intensity of color is necessary to produce the desired effect, since offset presses deposit a very thin film of ink on the paper.

The improvements of recent years have provided inks of many new and more intense colors, with better fastness to light, inks that will dry quicker, have greater resistance to rubbing and marring, lift easier from the blanket, and run with far less water than formerly.

One development in particular is a lithographic, soft-bodied and ready-for-press ink that will perform satisfactorily on the general run of papers, and with no further manipulation other than the addition of dryer. This ink, which is practically tackless, works perfectly on high-speed multicolor web offset presses, including even those for eight colors.

Offset inks for printing decalcomanias are a special line developed to suit the intricacies and peculiarities of this type of work, in which in many cases eight to 18 impressions may be necessary.

Inks for printing on metal by the offset process are available in a complete range of brilliant and concentrated colors that give wide scope to the artist in planning attractive metal can tube and cap decoration. These inks adhere firmly when applied to plain or sized metal, and particularly on the modern synthetic coatings.

The nonporous glossy surface of the metal decorating inks makes it possible to use less of finishing varnish and still obtain a lustrous finish. These inks bake much harder in shorter oven time and at lower temperatures. When properly baked, they permit the flat stacking of the sheets without the danger of either sticking or offsetting.

Gravure inks

Rotogravure ink consists of solvents, binders, and color, but contains no dryer, as drying is entirely by evaporation. The speed of drying is controlled by fast- or slow-evaporating solvents. Rotogravure printing is being done on such high-speed presses that enclosed fountains are being used to overcome the rapid evaporation of the extremely volatile solvents necessary for the success of this type of ink.

Venting of the sometimes toxic and usually inflammable fumes resulting from the use of this process, as well as the possible fire hazard, are factors to be considered.

The two-tone inks that are designed for halftone and screen engravings are particularly effective where the softness and realism of the halftone cut is desired. These two-tone inks are scientifically adjusted to bleed slightly on contact with the printing surface, imparting a two-color effect by a single impression. The bleeding action spreads the color into thin films that vary from strong darks to pale, transparent tints. Slip-sheeting is advisable.

Still other inks are modifications of the two-tone inks and may be printed without slipsheeting under most conditions.

The dull inks are soft in surface quality and are best used on absorbent boards and papers. The vehicle in dull inks more or less holds the pigment on the printed surface, and therefore allows for a richer intensity of hue than is possible with other inks.

Magic inks develop a secondary color such as red, blue, green, and yellow. Characters or plates are printed with these inks and later developed through the application of water or heat.

Invisible inks are not visible under normal conditions but turn color upon the application of water. When the print dries out, it again becomes invisible. These inks have also been developed as a safety device for testing counterfeit labels.

Weather inks turn red or blue, depending upon the atmospheric pressure.

Perfumed inks are regular printing inks to which have been added a small percentage of concentrated scent or flavor to impart a desired aroma or fragrance on the printed sheet. For instance, promotions for certain perfumes carry the essence in the printing ink. In other similar applications, an advertisement for chewing gum might be "flavored" with cinnamon, or a folder advertising cedar chests would have a definite smell of cedar. The scent lasts longer when it can reach the paper fibers; therefore, an uncoated stock is recommended.

Textile bag inks are used for printing on fabric bags containing loose products such as sugar, flour, cement, etc. These inks can be made so that the printing may be washed out if bags are to be reused by consumers.

Fluorescent inks that are activated by "black" ultraviolet light and that had a wide application during World War II for map reproduction purposes have been developed for both letterpress and lithographic use.

The wise designer of printing realizes that he has more to expect from a printing ink than color alone. Today, through scientific advancements in ink formulation, a wide variety of textures is available. To best take advantage of the special inks available, ink should be considered when the job is still in the planning stage.

These new surface effects not only lend variety and interest to printed matter, but have appropriate uses. When cleverly allied to certain products, they lend subtle emphasis to the sales story. Attention to textures introduces a tactile quality to printing to supplement the eye-appeal of the color itself.

Here is a new and refreshing way to add new power to layouts, to make printing inks work even harder and better.

Ink drying methods

Rapid and instant drying inks have been developed for gravure, letterpress, aniline, lithographic printing, facilitating increased press speeds

George R. Brodie

The purchaser of printing should have a considerable interest in the relatively new methods of printing that include the instantaneous drying of the printed film. He should be interested because the cost, quality, and availability of the product all are affected by the speed and efficiency of the method used.

The three methods of printing in general use today that include instantaneous drying are aniline, rotogravure, and the heat-set type of letterpress or offset printing. In all three methods, drying is accomplished by evaporating the liquid or solvent used in the ink.

All these inks are made of a pigment ground into a varnish. The varnish consists of resins mixed or cooked into a solvent. When the solvent is driven off by evaporization, a dry ink film is formed by the resin from the varnish holding the colored pigment particles on the surface of the printed paper.

Applications overlap

Because the basic theory of the three methods is similar, it is not surprising that their applications tend to overlap. There are jobs that can be done by two or even all three methods, but generally one method is indicated as being the best for any given job.

Aniline printing derives its name from the fact that aniline inks originally were made by dissolving aniline dyes in alcohol. Today, however, most aniline inks are pigmented and resins are used in the varnish. Alcohol in one form or another is still the most used solvent. Since the solvents have a low boiling point, these inks are easy to dry.

Drying in aniline printing is accomplished by passing the printed film under a gas flame or a bank of infrared lights. Since so little heat is required, this method is used in printing cellophane, glassine, and other papers that are easily damaged by excessive heat. Aniline printing presses are also simple and can easily be attached to a machine that further fabricates the printed sheet. The making of printed bags is an example of this. The paper is fed into the machine from a roll, printed, dried, formed, and delivered as printed bags all in one operation at high speed.

The simplicity of aniline presses, plus the fact that they all use rubber plates, makes it possible to construct a press that can be readily converted to print a range of sizes. The rubber plates also eliminate makeready. It thus can be seen that the capital investment that is required and the cost of printing are both comparatively low.

Aniline printing quality

The quality of aniline printing is only fair, and only simple halftone work can be done. However, the results obtained are constantly improving and already are good enough in cases where most of the subject matter is type and solids. Any number of colors can be printed, and the register obtained between colors is reasonably good.

In rotogravure, drying is accomplished by passing the web of paper over a steam drum or through a short tunnel. The inks dry quickly, since low boiling petroleum solvents are used. If a steam drum is utilized, it is usually of about 36 inches diameter, and is used with low or medium pressure steam. Rotogravure drying tunnels are five to 10 feet long, the web being blasted with large quantities of warm air—120 to 240 degrees Fahrenheit. After drying, the web is cooled by passing it around one or more cooling rolls before further printing or fabricating steps are taken.

High-speed gravure

Rotogravure presses run at web speeds up to 1,400 feet a minute, so it can be seen that drying is accomplished in less than one second. Since the vapors and fumes given off in the drying can be toxic or inflammable, great care has to be given to proper ventilation and fume removal. It also is possible with the use of a recovery system to reclaim a large portion of the solvents that are used.

Rotogravure printing has effected greater strides in recent years, than other methods of printing, with drying. It can be used for almost all types of printing and its quality will match that of any other method. Rotogravure presses are high priced, but the technique and skill required of the crew is less than that for similar quality letterpress work.

There are some serious handicaps in rotogravure printing. As mentioned, the resulting fumes are explosive, hence the pressroom and dryers must be built and operated with this in mind. The inks and solvents have to be handled with care. The printing is etched on cylinders, each of which may contain several pages of a magazine or other units of the product being printed. The preparation and etching of these cylinders is expensive. An error in preparation or damage in work on any part of the cylinder can be corrected only by reworking the entire cylinder. Any change in the printing matter on a cylinder also requires the re-etching of the cylinder. The greatest drawback of the method is the inability to maintain absolute color value and hairline register with precision.

Rotogravure uses

This rotogravure process of printing is used in newspapers, Sunday supplements, and magazine sections. Magazines also are using it not only for black-and-white printing but also for the most complicated four-color advertisements. Specialty printers utilize it for bags, cartons, and labels. It is a universal method of printing that can be considered for any product that requires the instantaneous drying of the printed ink film to make the printed product available for further processing.

The great bulk of printing is done by the letterpress process from raised type. The ability to instantly dry the inks used in this process has been a tremendous asset. Unfortunately, this type of product can only be so dried when it is

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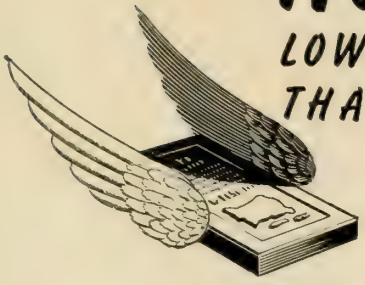
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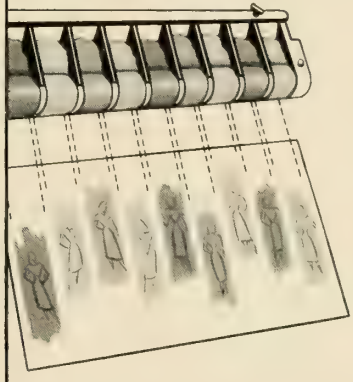
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PANTONE PRESS, INC.

461 EIGHTH AVENUE, NEW YORK 1, N. Y.

printed from rolls and when the sheet can be taken through the dryer in web form, as in mass publication printing.

Web-fed letterpress

The ability to dry this method of printing has made it possible to produce the ever growing number of color pages evident in today's periodicals. Drying also has increased the quality of web press printing as well as tripled the printing speed. The time required to print a magazine has been greatly reduced. Without drying the ink, it would be impossible to print the numerous news magazines now in circulation.

Before the advent of dryers, color work was done on sheet-fed presses. The sheet was fed through the press a sufficient number of times to print the four-color picture. Each time it passed through the press, a four- to 24-hour drying period was required before the next color or the other side of the sheet could be printed. On web press work, two colors on each side were the maximum, and the ink film had to be kept very thin to prevent smudging. It was necessary to stack the printed sheets for about eight hours after printing before they could be handled.

Today high-speed magazine presses print five colors on each side of the paper, dry each side, and deliver by means of a folder 8- to 64-page signatures. This is done at web speeds of 800 feet a minute, or as many as a quarter-million signatures in 24 hours. The signatures are completely dry and ready to be bound into books when they leave the printing press.

Rapid drying of letterpress printing is used in other fields. A great many coffee and sugar bags are printed this way. In this case the drying process not only increased press speeds, but also eliminated expensive slip-sheeting and added to the quality and gloss of the printed film. There is no reason why it cannot be widely used in specialty printing, except that present drying methods tend to reduce the moisture content and strength of the paper.

Gas-flame dryers

There are now three methods in general use for the drying of letterpress printing. The first is to pass the web under a series of intense gas flames. The paper actually moves through the flame itself, its speed preventing it from catching fire. It then is chilled by water rolls. Since the solvents used in this type of ink boil at temperatures from 450 to 650 degrees Fahrenheit, a severe drying treatment is required. The gas flame type of dryer is compact, but sometimes is the cause of paper fires. The paper also is apt to be discolored and scorched, and the printed film dull and lifeless. However, a great amount of printing is done this way and gas flame dryers must be considered today a standard part of pressroom equipment.

A second method is drying by means of a steam drum and a hot air blast. Here the web is passed around a large diameter steam drum and blasted with air at 300 to 600 degrees Fahrenheit. The web then is cooled by passing it over water rolls.

This method seems to be better, since paper fires and scorching are eliminated and the quality and gloss of the work are much improved, operating costs are reduced, and press production increased.

A third method is letterpress printing with an ink that has a resin in the varnish that is unstable in the presence of water. Drying is accomplished by spraying the printed film with water or steam. The resin comes out of solution and the vehicle is absorbed into the paper. This method is used where no halftones are involved and the quality of the work is not high.

The drying of ink thus is an accomplished fact in many methods of printing. No printing operation should be considered without thought of the instantaneous drying of the ink. There are many cases in which it would be impractical to consider drying, but there are more instances where to neglect it would be disastrous.

Recently developed inks

(The editors of the PRODUCTION YEARBOOK offer the following brief trade-name listing and description of the more common and more recently developed fast drying inks. It is by no means an all-inclusive list.)

Increased printing speeds, particularly in the web-fed field, have made necessary faster drying inks than have heretofore been available. Most major ink companies have met this challenge with one or more fast and almost instant-drying inks.

Ink drying, as a result of the many new products reaching the market, is now accomplished in a number of ways. Drying by penetration is most common to newspaper printing. Other methods include oxidation, evaporation, setting as a result of a temperature change, setting from printing pressure, and setting after a change in moisture balance. Chemicals and catalysts in the inks, ovens, infra-red rays, steam, and water are among the agents that are now used to facilitate drying.

Perhaps more attention has been paid to the problem of rapid drying during the last few years than to most other printing problems. Trade-names and brief descriptions of some of the faster drying inks developed by the manufacturers in recent years follow:

Cold-set ink that dries when subjected to lowered temperatures is a solid that is melted into a fluid as it passes through the press, then "frozen" back to a solid on the paper. *Thermo-fluid* inks, for use in the cold-set process, are claimed to permit printing speeds of 600 to 1,500 feet a minute.

Heat-set inks

Flashdri is a heat-set ink, and as with others of this kind, is used to best advantage on high-speed web-fed presses.

Zephyr also dries instantly upon the application of heat. *Meteor* is a moisture-set ink that dries instantly when in contact with live steam. Used on web- or sheet-fed letterpress jobs its widest application is in the field of bag printing. *Zip-Dri* is a rubber base letterpress ink that sets instantly on coated paper without the application of any special drying agent or equipment.

Vaposet ink dries when sprayed with plain tap water or steam. *Vaporin* dries through vaporization under heat. *Vapolith*, for high-speed offset presses, is an adaptation of Vaporin.

Wink-Dri is claimed to dry on coated stock within a few seconds and without heat or spray, but will not dry on the press even if exposed for 24 hours. When used for color work, it is said to permit trapping and immediate drying of each color without crystallization.

Hydry inks dry instantly on presses equipped with steam applicators, and in 10 to 20 minutes on ordinary presses on most stocks. Contact with moisture causes the ink to dry. Moisture in the paper or in the surrounding air is usually adequate unless instantaneous drying is desired.

Other inks that are particularly designed for instant or rapid drying are *Snapdri, Quixet, SUperset, SUveneer, Kwikgloss, Eaglos, Glostone,* and *Rediset.*

1 Art and photography

2 Photo-engraving

3 Electrotypes, duplicate plates

4 Paper

5 Printing processes

Binding, mailing, etc. 6

Binding, mailing

Push tab down, fold on this crease then fold upward on other crease over edge of page and insert in slot.

7 Typography

8 Buyers' guide, index, etc.

Thumb-dex patent 2300623
Other patents pending

Binding, mailing, etc.

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Postal information

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Compiled by the editors

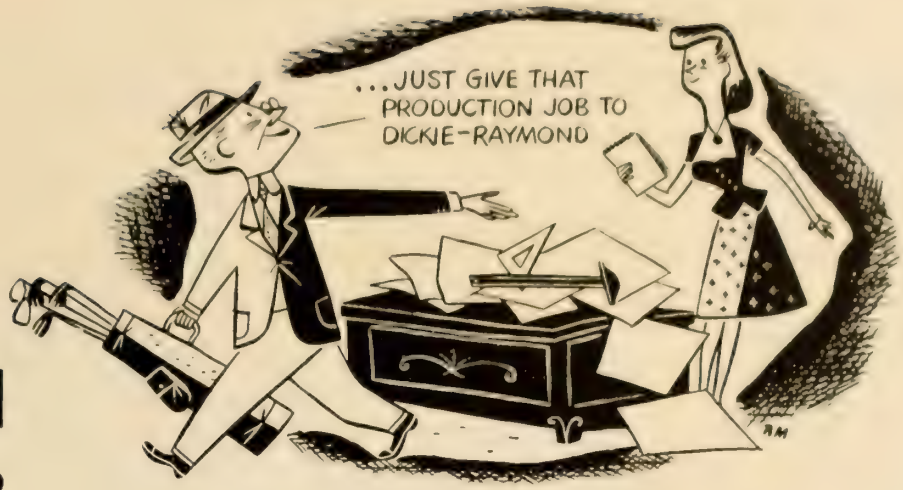
Class	Rate	Limits	Remarks
First class **Definition:** Any [illegible] matter sealed against postal inspection. The test is [illegible] whether sealed or not: handwritten, hand-typed, automatically typed, carbon copies, letterpress copies, imitation handwriting or typed copies of less than 20 identical pieces. Letters mailed in business reply envelopes. Anything in the nature of a personal communication. (For remailing, see third class bulk mail data.) **Exceptions:** Typed or handwritten manuscript copies accompanying proof sheets of same can be mailed 3rd class (4th class if over 8 oz.). May contain correction of marginal instructions to printer. If unaccompanied by proofs, at 1st class rate. Writing authorized to be placed in matter of other classes.	3c oz. in U.S. or possessions. 3c oz. Canada, Central or South America, Spain or possessions, Mexico. Other foreign. 5c for the 1st oz. or fraction. 3c for each additional oz. or fraction. (Fractions of an oz. count as full oz.)	**Size:** None **Weight:** To 70 pounds. 4 lbs. 6 oz. for printed matter **Quantity:** None	**Oversize:** If size is larger than average commercial envelopes, it is apt to be folded in handling unless protected by a stiffener. At least 3½" of space at right end for address, stamp, etc., is required for all classes. Weight limit of letter packages for Canada and Newfoundland including Labrador is 60 lbs. **Registry:** First class and sealed third or fourth class mail prepaid at first class rates may be registered. Indemnity is provided to the amount of $1,000.00 at fee in addition to the regular first class rates. Fees for indemnity limited to: Up to $5.00 ..... 20c $ 5.00 to $ 50.00 ..... 25c 50.00 to 75.00 ..... 35c 75.00 to 100.00 ..... 40c 100.00 to 200.00 ..... 55c 200.00 to 300.00 ..... 65c $300.00 to $400.00 ..... 80c 400.00 to 500.00 ..... 95c 500.00 to 600.00 ..... $1.05 600.00 to 700.00 ..... 1.15 700.00 to 800.00 ..... 1.20 800.00 to 900.00 ..... 1.25 900.00 to 1000.00 ..... 1.35 Full value of registered material must be declared, otherwise claims will be invalid. Registry may be made for less indemnity than full value if small additional surcharge fees are paid. Mail without intrinsic value, such as legal notices for which no indemnity is provided, may be registered for minimum fee of 15c. **Surcharges:** When declared value of domestic registered mail exceeds stated indemnity, following surcharges are levied: **Excess value / Surcharge / Excess value / Surcharge** $50.00 2c $600.00 7c 100.00 3c 800.00 8c 200.00 4c 1,000.00 10c 400.00 6c For excess over $1,000.00 for each $1,000.00 or part thereof: **Zone / Surcharge / Zone / Surcharge / Zone / Surcharge** Local, 1..11c 3.....14c 5-6 .....16c 2.....12c 4 .....15c 7-8 .....18c In case of non-negotiable securities, surcharge is based on the known or estimated cost of duplication. Registration fee for mail without intrinsic value for which no indemnity is paid, 20c. **Return receipt** requested at time of mailing—4c extra. Return receipt requested after mailing—7c extra. Return receipt requested at time of mailing to show the address where the article is delivered—31c. **C.O.D.** Mail—Registered (sealed matter of any class bearing first-class postage) Fees for collections and indemnity limited to: $10.00 40c $100.00 75c 50.00 55c 200.00 $1.00 **C.O.D.** charges not exceeding $200, but indemnity up to: $300.00 .....$1.05 $600.00 .....$1.20 $ 800.00 $1.30 400.00 ..... 1.10 700.00 ..... 1.25 1,000.00 1.40 500.00 ..... 1.15 (Surcharges are collectible on registered C.O.D. mail—see postmaster.)

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Postal information, continued

Class	Rate	Limits	Remarks
First class, continued			**Special delivery:** First class U. S. 2 lbs. or less ..... 13c 2 lbs. to 10 lbs. ..... 20c Over 10 lbs. 25c **Envelopes** for first class should be completely sealed either regular or window style. **Stamping:** First class mail can use regular stamps, precancelled stamps with special authorization, meter, or cash permit if 300 or more identical pieces. **Special delivery envelopes** may be privately printed, as follows: 5/32" all around border of alternating green and yellow semicircles on address side and back. Words "Special Delivery" in green ink between two yellow lines in upper right portion. 1⅜" x 3½" space reserved for stamps, postmarks, etc. Return address required.
Post cards **Definition:** Post cards, governmental and private mailing post cards. **Exceptions:** Post blotter. **Written:** **Printed:** 3c Out of town 1½c 3c..... Local .....1½c See Sec. 562 PL&R Over 200 pieces, 1c	1c each in U.S. and possessions. 2c Canada, Central and the South American Republics, Spain and possessions, Mexico. 3c other foreign.	**Size:** 2¾" x 4" to 3 9/16" x 5 9/16". Foreign Maximum 4¼" x 6". **Weight:** Shall consist of unfolded piece of cardboard in quality and weight substantially like the government postal card **Quantity:** None	**Government postal cards** may bear advertisements and illustrations on back and left third of the face. No cost for cardboard stock when using government cards. **Private mailing cards** and business reply cards must be made of cardboard substantially the same in weight and quality as the government postal card. Not accepted if smaller than minimum size. **Oversize cards,** if wholly in print, may be sent third class. If wholly or partly in writing, or bearing the words "Postal Card" or "Private mailing card," they are subject to letter rate (1st class) of postage.
Reply cards **Definition:** Double or reply postal cards: (Must be folded before mailing, not necessary to fasten.) **Exceptions:** If other half of card is not a bona fide reply portion, not accepted at double reply rate.	Same as for post cards; but reply half, when detached and mailed requires 1c postage in U. S. and possessions.	**Size:** Min.: 2¾" x 4". Max.: 3 9/16" x 5 9/16". **Weight:** As with Post cards above. **Quantity:** None	**Enclosures prohibited.** Metal clasps cannot be used on edges. If relating to past-due account, must be sealed. If seal or plain sticker used, do not make it impossible to examine inner folds of card. **If postage stamp** is to be used to seal, it must be precancelled.
Business reply cards **Definition:** Business reply cards and envelopes and labels: Sec. 510 P. L. & R. (Make application to Postmaster on form 3614.) **Exceptions:** May be distributed outside the mails if no abuse results. Can be reply portion of double post cards or folded cards, or label from paper or magazine pasted over envelope or card or enclosed with other matter.	**2c each** for cards collected on delivery; for air mail—regular air mail plus 1c. **Envelopes** are 1c in addition to regular postage rate.	**Size:** Same as Post cards for Reply cards. **Weight:** As with Post cards above. **Quantity:** None	**Should not be sent to foreign countries** as they are good for mailing only in the United States and possessions, with the exception of the Canal Zone. **No deposit required,** but it may be made, when permit is obtained or when cards or envelopes are sent out. Need not be presented at any particular place in Post Office. **Printing:** One of the exact forms supplied by the Post Office must be followed. When Form "B" is adopted the indicia at the top in the left and right corners should be printed in circles within solid or shaded squares. The printing may be in two or more colors. A press copy proof showing how the printing will appear on the address side should be submitted. The bars at the right side should extend to within ⅛" of the right edge of the card or envelope. **Illustrations:** Designs, trademarks, emblems, or advertisements are not permitted on the address side of business reply envelopes or cards, and nothing should appear in connection with the address except that which is necessary to effect delivery of the article. **Designation:** On cards the designation should be printed in large bold type: BUSINESS REPLY CARD; and on envelopes: BUSINESS REPLY ENVELOPE. Also the inscription "No postage stamp necessary if mailed in the United States," and the words "Postage will be paid by addressee" (whose name may be inserted if desired), or in lieu of such words the inscription "2 cents postage will be paid by" in the case of cards, or "4 cents postage will be paid by" in the case of envelopes, over the name and complete address of the person or concern to whom the cards or envelopes are to be returned.



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We go *outside* for all finished artwork — choosing from a large and growing group of top artists, picking *only* the artist best qualified for the particular job at hand. In this way, we can offer you a wide choice of art treatments, assure you of the type of art your job needs.

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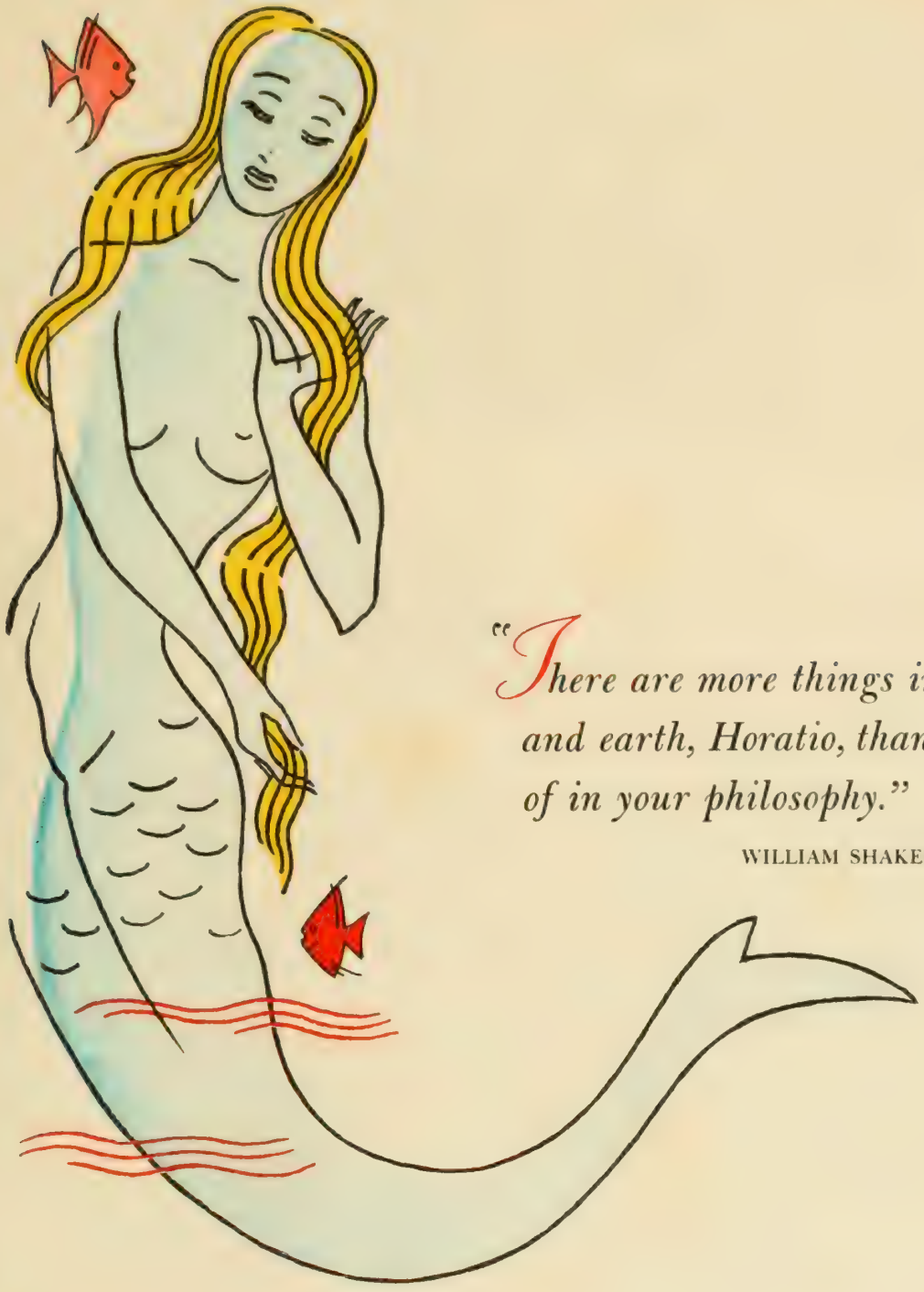
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DIRECT ADVERTISING, MERCHANDISING AND SALES PROMOTION COUNSEL

Postal information, continued

Class	Rate	Limits	Remarks
Business reply cards, continued			**Parcels:** Business reply cards and envelopes may not be used to mail parcels without prepayment of the required postage nor as address tags or labels, and should not be furnished to anyone for such purpose. **Double cards:** If a card that is to be returned as a business reply card is prepared as the reply half of a double card, such double cards must be so arranged that the return address appearing on the front of the address side of the business reply card is on the inside when the double card is originally mailed. **Postmarking:** A space of at least 1⅛" shall be left for postmarking at the top of the card or envelope on the left of the indicia in the upper right corner. Such indicia shall be prominently printed and not obstructed or surrounded by any other matter. **Business reply envelopes** may be air mail or regular style, completely sealed.
Air mail **Exceptions:** Articles liable to damage from freezing not acceptable. (Except cut flowers and Queen bees.)	**5c oz.** for each oz. or fraction in U. S., or within or between any territories or possessions of the U. S.	**Size:** 100" in length and girth combined **Weight:** Not over 70 lbs. **Quantity:** None	**Distinctive red and blue markings** should be on air mail envelopes. (See list of items prohibited to mail, listed under 4th class.) **Indorse matter "Via air mail"** conspicuously, immediately below stamps and above address. May be registered, insured, or sent C.O.D. Such fees in addition to regular air mail postage.
Second class **Definition:** Newspapers, magazines and other periodicals (containing notice of 2nd class entry), if published from a known office at stated intervals; numbered consecutively; bearing date of issue; with annual subscription price; with legitimate list of subscribers and if designed for the dissemination of information of a public character. **Exceptions:** When not entered as 2nd class matter, takes 3rd or 4th class rate, or when has enclosures or additions. If designed primarily for advertising purposes, or for free circulation, or for circulation at nominal rates, or if substantially bound as a book, takes 3rd or 4th class rates, as house organs. May have bound printed inserts, subscription or renewal cards bound through. Mailings to paid subscribers, also sample copies equal to 10% of paid circulation. Non-profit organization, publication, (see Sec. 538, Par. 4).	**Local Delivery:** **Newspapers** — (issued more than once a week): 1c per copy, regardless of weight. **Periodicals** (issued less often than once a week): 1c per copy under 2 oz.; 2c per copy over 2 oz. **Weeklies:** 1c lb., if delivered within same county as publication office. **Lb. Rate per zone:** Zone — Advt. Portion 1 — 1½c 2 — 1½c 3 — 2c 4 — 3c 5 — 4c 6 — 5c 7 — 6c 8 — 7c Nonadvertising portion is 1½c per lb. additional. (When advertising does not exceed 5% of total space, rate is 1½c lb. on advertising portion, irrespective of zone.)	**Size:** None **Weight:** When weight of any 1 issue mailed to any 1 zone does not exceed 1 lb., the rate is 1c per pound **Quantity:** Refer to additional regulations	**No extracts** or clippings accepted as 2nd class matter. **Quantity limits:** When 32 or less individually addressed copies or packages per lb., lb. rates apply. When 33-48 per lb., double regular lb. rates. When 49-64 per lb., triple regular lb. rates. For each additional 16 per lb. group, rates increase correspondingly. **Qualified publications produced by various duplicating processes,** such as photo-offset, etc., may be entered as 2nd class matter, provided that both left-hand and right-hand margins of the columns are aligned, and the type used is not an imitation of typewriting. Publications produced by stencils, mimeograph, or hectograph, or in imitation typewriting, not eligible for 2nd class entry. **Special delivery:** Second, third and fourth class: 2 lbs. or less ..... 17c 2 lbs. to 10 lbs. ..... 25c Over 10 lbs. ..... 35c Special delivery should be so endorsed. **When publications are enclosed** in envelopes or wrappers they should bear in the upper left corner the title and office of publication, and preferably in the upper right corner, a notice of entry as second class matter. All publications which cannot be handled with facility, due to small size, should be enclosed in envelopes or wrappers. **Application for 2nd class entry:** Fill out form 3501, accompanied by fee. **Fees:** Circulation up to 2,000 ..... $ 25 Circulation 2,001-5,000 ..... 50 Circulation 5,001-over ..... 100 **Two copies** of most recent issue must be filed. If in foreign language, submit under oath brief translation of its contents. **Mailing: Submit** one marked copy to show advertising and nonadvertising portions. Mark on cover percentage of each. **Should be tied** and labelled by states if more than 5 per state. Same applies if 5 or more to a city.



"There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy."

WILLIAM SHAKESPEARE · HAMLET

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ADDRESSOGRAPHING • Elliott, Addressograph.

PERSONALIZED • Gratype, Multigraphed-Process-Penscript.

MULTIGRAPHING • Circulars, 3-Color Letters, Signatures, Plate, Flat Bed.

FOLDING • Punching, Perforating.

DIRECT MAIL CREATIVE SERVICE • Advertising ideas, planning merchandising, sales promotion.

MIMEOGRAPHING • Standard low cost, high quality mimeo reproductions. Stencil cutting service.

MULTIPRINTING • High speed production, direct inking. For manifold sales letters, etc.

VARITYPING • Variable type selections for composing use in offset reproduction. Right hand margins justified.

MUrray Hill 2-9000

James Gray, Inc.

Lithographers ★ *Lettercraftsmen* ★ *Printers*

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Postal information, continued

Class	Rate	Limits	Remarks
Second class, continued			**Must be presented** at Post Office [illegible]
			Stamping: [illegible]
			Sample copies in excess of 10% of paid circulation must be mailed at transient rate.
			Envelopes: When enclosing second class mail in envelopes, envelope must have notice of "Entered as Second Class Matter" in prescribed form in upper right hand corner and the name and address of the publication in the upper left corner. Small size publications should be enclosed in envelopes. Second class envelopes may have sealed flap with spot of gum holding inspection flap with permission to open for inspection printed on or near inspection flap. Inspection flap may be ungummed and tucked into envelope body, or flap may employ mechanical device, as a clasp, if it permits easy inspection.
Third class **Definition:** Unsealed mail weighing 8 oz. or less, not 1st or 2nd class matter. Circulars: Books or catalogs of 24 pp. or more (counting covers); other printed matter, not in nature of personal correspondence: drawings, merchandise, seeds, bulbs, roots, scions, plants. Drawings, blueprints, form letters (20 or more identical copies), proof sheets, corrected proofs, manuscript copy accompanied with corrected proof sheets thereof, multigraphed or mimeographed letters. **Exceptions:** Must be arranged so entire contents can be examined easily. Merchandise, seeds, bulbs, roots, scions, plants, may be mailed in sealed container, provided printed label as outlined under 4th class regulations, be affixed to mail. (See below: "If parcel is sealed:" under fourth class, exceptions.)	**Circulars:** 1½c for each 2 oz. or fraction, up to and including 8 oz. (If 200 or more identical pieces, see "bulk mailing" below). Over 8 oz., 4th class. **Books, catalogs:** Having 24 pp. or more (counting covers), 22 of which are printed, 1c each 2 oz. or fraction (up to 8 oz.). See under remarks for permissible enclosures. **Seeds, cuttings, bulbs, scions, plants:** 1c each 2 oz. or fractions (up to 8 oz.).	**Size:** 100" **Weight:** Not over 8 oz. **Quantity:** None (for printed matter)	**Must be 20 identical** unsealed copies mailed at Post Office window or other depository designated by Postmaster, if a reproduction or imitation of handwriting or typewriting made by printing press, mimeograph, multigraph, or similar process. Can be signed individually in ink and/or personalized by typewriter, pen and ink, printing, or stencil. **Reproductions or imitation of handwriting or typewriting not in the form of circular** letter but bound in pamphlet or book form of at least five sheets, no minimum quantity. **Self contained mail matter:** Matter may be in wrappers or in envelopes by fastening edges together to facilitate handling. (Not to be sealed against inspection.) **Do not print closer than** 3½" from right portion of address side, which is reserved for postage stamp or permit and address. Piece mailed must not be of flimsy character. Samples of merchandise may not be attached or enclosed with book or catalog except at 1½c per 2 oz. or fraction rate for entire package. (See list of items prohibited to mail, listed under 4th class.) **Postage-saver envelopes:** If spot of gum (not larger than ⅛" in diameter) is used to hold loose flap and body of envelope together, must print "Pull out for postal inspection" on loose flap or immediately adjacent thereto and entirely exposed to view. **Enclosures permitted under book and catalog rate:** (1c ea. 2 oz.) (a) Single reply envelope or card, or both. (b) Single order form. (c) A single loose printed circular, or circular letter consisting of single sheet not larger than size of page of book or catalog, if it obviously relates only to book or catalog. No extraneous matter, sales talk, or price list differing from prices shown in catalog allowed at book rate. If price list enclosed, no other circular permitted. **Registry:** (See data under first class.) **Special delivery:** (See data listed under 2nd class.) **Stamping:** Can use regular or precancelled stamps, meters, or cash permit if 300 or more identical pieces. **Miscellaneous:** Envelopes for third class mail not covered under heading merchandise nor under booklets may have flap sealed with spot of gum on inspection flap, may have inspection flap tucked into envelope body, or may have flap closed with clasp or mechanical device that permits of ready inspection. Must have printed permission to inspect on or near inspection flap.

Postal information, continued

Class	Rate	Limits	Remarks
Bulk mail, third class **Definition:** Bulk mail. Unsealed 3rd class mail, presented at Post Office or other designated station, in quantity of 200 identical pieces or over, or else in minimum weight of 20 lbs. under permit for section 562 P. L. & R. Fan mail, and similar postal matter requiring bulk forwarding, received as first class, when unopened, may be bundled together and forwarded at 3rd or 4th class rates. **Exceptions:** Separately addressed pieces may contain several enclosures each, but each piece must be identical in size and weight, contain same number of enclosures, etc. (See below: "If parcel is sealed:" under fourth class, exceptions)	**Circulars, other printed matter, or merchandise:** Up to 1⅓ oz —1c with or without stamps. Over 1⅓ oz.—permit matter, without stamps affixed, 12c lb. **Books, catalogs, or seeds, cuttings, bulbs, scions, plants:** 8c lb., minimum 1c each piece (where under 2 oz.). Postage must be paid in full on entire quantity before or at time of mailing. See Rate Chart for bulk mail on Page 348.	**Size:** All in lot must be same size **Weight:** Must weight 8 oz. or less. All in lot must be same weight. **Quantity:** Must consist of either 200 pieces or 20 lbs. minimum at any mailing.	**Application:** Must make application to the postmaster. Each application for a permit to mail third-class matter without stamps affixed as non-metered mail should be accompanied with a fee of $10.00. Permits to use precancelled stamps or meter mail require no fee. **Cannot be postmarked,** or deposited in street letter boxes. **Stamping:** Uses precancelled stamps or meters. Can use cash permit if 200 or more identical pieces or 20 lbs. minimum at any mailing, under (562). **If precancelled stamps,** or meter is not used, each lot must be accompanied by a certified check drawn on Federal Reserve Bank, or cash. **Must be separated and tied** as provided by Sec. 562 P. L. & R. Should be tied and labelled by states if 15 or more per state; some applies if 15 or more per city. In upper left corner on address side should appear name, street address, town and state of sender (or rented P. O. box, or R.F.D. number, city, and state). If to be returned in case of non-delivery: "Return postage guaranteed" should appear under sender's name and address. **In case of non-delivery** as addressed, forwarding address may be obtained if known, by imprinting in lower left corner on address side, Postmaster: If addressee has removed and new address is known, notify sender on Form 3547, postage for which is guaranteed." This costs 2c for each corrected address but will guarantee a 100% corrected up-to-date mailing list. **Foreign mailing:** Printed matter shall not be acceptable for mailing to any foreign country under the provisions of section 562. **Window envelopes:** Must be so prepared that the window is parallel with envelope's length and does not occupy any space within 1⅜" from top or ⅜" from envelope bottom or ends. When covered, window must be as transparent and free from glaze as possible. There must be no printing within ⅜" of the window or where the printing will interfere with a distinct postmark, rating indorsements, forwarding address, etc. A plain border not wider than 5/32" is permissible around the window or the envelope's outer edge. Enclosures must not shift or obscure the address in whole or in part. Sender's name and address must appear in the upper left hand corner. His return card must show his name, post office, postal delivery zone number, if any, and state. When post office has carrier service, the card must also show street address or box number. **Booklet envelopes:** Should be completely sealed but with printed permission to inspect, as follows: "Contents Book—Postmaster: This parcel may be opened for postal inspection if necessary." **Merchandise envelopes:** Completely sealed envelopes used. Should have name and address of sender printed and must have: "Contents merchandise—Postmaster: This parcel may be opened for postal inspection if necessary" printed in ordinary printer's type.
Fourth class **Definition:** Domestic Parcel Post. Merchandise, books, printed matter, and all other mailable matter, weighing over 8 oz., not in 1st or 2nd class, bearing name and address of sender, preceded by word: "From". (Return address should be less conspicuous than that of addressee.) Proof sheets, manuscripts, etc., accompanied with corrected proof sheets thereof.	**Zones / Mile Radius / First* Pound** Local — 7c 1 & 2 — 50/150 — 8c 3 — —300 — 9c 4 — —600 — 10c 5 — —1000 — 11c 6 — —1400 — 12c 7 — —1800 — 14c 8 — —1800 — 15c **Zones / Additional Pound** Local — 1c ea. 2 lbs. 1 & 2 — 1.1c per lb. 3 — 2.0c 4 — 3.5c 5 — 5.3c	**Size:** 100" maximum for length and girth combined. Length is greatest distance in straight line between the ends (but not around the parcel). Girth is distance around parcel at thickest point. **Weight:** Exceeding 8 oz. with 70 lbs. max. **Quantity:** None	**Stamping:** Uses regular stamps or meter. Can use cash permit if 250 or more identical pieces. **Unmailable matter:** (Applies to all classes of mail): Anything of harmful nature, e. g., poisons; explosives; corrosive articles; matches (except safety matches which must be packed in special containers); live animals; fowls (except day-old: chicks, geese, guinea fowl and turkeys); insects; reptiles; articles with bad odor, etc. **Special handling:** On fourth class mail, only. Fees (in addition to regular package). Up to 2 lbs. ..... 10c 2 lbs. to 10 lbs. ..... 15c Over 10 lbs. ..... 20c Special handling must be so endorsed. It receives most expeditious handling, transportation, and delivery practicable (but not special delivery).

Class	Rate	Remarks

Fourth class, continued

Exceptions: If parcel is sealed: Must bear on address side printed label to show nature of contents, e.g.: "CONTENTS — MERCHANDISE"—together with "Postmaster: This parcel may be opened for postal inspection if necessary"; and name and address of manufacturer, producer, or shipper. (Such name and address may be written or hand-stamped.) Parcels weighing less than 10 lbs. but over 84" in length and girth combined, take 10 lb. rate.

Exceptions to book rates: (For book rates, see adjoining column.)

Annual reports of organizations.
Books in other than final forms.
Pamphlets of less than 24 pages.
Books with blank pages for solutions or notes (Bibles excepted).
Loose-leaf books to be added to from time to time.
Notebooks.
Albums.
Books with other than authorized advertising matter.

Library books: Books sent by authorized libraries to readers and when returned by such readers, for delivery within the first three zones or the State in which mailed: 4 cents for the first pound and 1 cent for each additional pound up to and including 47 pounds; 52 cents for 48 pounds and 1 cent for each additional pound up to and including 70 pounds.

Zones	Additional Pound
[Continued]	
6	7.0c
7	9.0c
8	11.0c

*Rates on parcel post and books were increased above those listed herein by 3 per cent or 1c per parcel, whichever is the greater.

To determine zone, look up town's unit number in U. S. Official Postal Guide, then refer to "Zone Key" supplied by your Postmaster on request.

Book Rates: Postage on books containing no advertising other than authorized is 3c per lb. for domestic mail regardless of zone.

Weight in lbs.	Rate per lb.	Plus
0-16	3	1
17-27	3	2
28-38	3	3
39-49	3	4
50-61	3	5
62-70	3	6

Exceptions:
(a) In 1st or 2nd zone, where distance by shortest regular practicable route is 300 miles or more, the rate is the same as for the 3rd zone.
(b) If from 85 to 100 inches in length plus girth, and under 10 lbs. in weight, at minimum of 10 lb. parcel for zone to which addressed.

Insurance:
Domestic 3rd and 4th class mail may be insured against loss, rifling or damage in any amount equal to its actual value up to $200.00 by payment of the following fees in addition to postage.

Indemnity not Exceeding	Fee	Indemnity not Exceeding	Fee
$5.00	3c	50.00	15c
25.00	10c	200.00	25c

Fee for return receipt 4c extra.

C.O.D. (Unregistered):
Domestic 3rd and 4th class mail and sealed domestic matter of any class bearing postage at the 1st class rate may be sent C.O.D. with a limit on collection of $200.00 on payment of the following fees:

Not Exceeding	Fees	Not Exceeding	Fees
$2.50	15c	100.00	50c
5.00	20c	150.00	55c
25.00	30c	200.00	60c
50.00	40c		

Communications Attached:
Letter in envelope, prepaid at 1st class rate, may be tied or otherwise securely attached to address side of 2nd, 3rd or 4th class package, not to interfere with address of parcel. Stamps for letter affix to letter; for parcel affix to parcel. Such parcels treated as 3rd or 4th class matter, depending on weight. If special delivery desired, special fee required on package only. Combination envelope and container may be used, showing name and address of sender and addressee.

Permissible enclosures (3rd or 4th class):
Invoice, written or printed, showing name and address of sender and addressee; quantities; price of articles enclosed; order or file number; date of order; date and manner of shipment; initials or name of salesman, packer, checker.

Enclosures permitted under the new book rate:
Reply envelope, post card, single order form, one sheet size of book page and pertaining to book with which enclosed, invoice.
To ship circulars, etc., special permit is required. Must pay postage at regular rate of 1½c for each 2 oz. and fraction for such enclosures in addition to book postage and marked package "Additional postage at the 3rd class rate paid for enclosures, New York, N. Y., Permit No. 1." Enclosures in excess of 8 oz. should be mailed separately.

Forwarding or return to sender as undeliverable: chargeable again at original rate. Must be prepaid, unless bearing sender's pledge to pay postage, in which event collection is made upon delivery.

Registry: (See data First Class.)

Consult Postmaster for foreign mailing regulations.

Contents must be declared. (Certain mail shipments are also subject to duty.)

Catalogs: Having 24 or more pages, bound, weighing over 8 oz. but less than 10 lbs., and individually addressed:

Weight in lbs.	Zones Local	1st	2nd	3rd	4th	5th	6th	7th	8th
1	5c	5c	5c	6c	7c	8c	9c	10c	11c
2	5½c	6c	6c	8c	10c	12c	14c	16c	18c
3	6c	7c	7c	10c	13c	16c	19c	22c	25c
4	6½c	8c	8c	12c	16c	20c	24c	28c	32c
5	7c	9c	9c	14c	19c	24c	29c	34c	39c
6	7½c	10c	10c	16c	22c	28c	34c	40c	46c
7	8c	11c	11c	18c	25c	32c	39c	46c	54c
8	8½c	12c	12c	20c	28c	36c	44c	53c	61c
9	9c	13c	13c	22c	31c	40c	49c	59c	68c
10	9½c	14c	14c	24c	34c	44c	55c	65c	75c

Foreign parcel post: Consult Postmaster. Contents must be declared. (Certain shipments also subject to duty.)

Data on third class mail

Postage required for separately addressed identical pieces of third class matter mailed in bulk lots

Mailings must consist of not less than 20 pounds or not less than 200 pieces.

Postage must be paid either in money and the matter mailed without stamps affixed under permit according to Section 579 P. L. & R. or by precancelled stamps affixed to each piece. Uncancelled stamps may not be used.

Books and catalogs must not contain any unpermissible loose enclosures.

Circulars, printed matter (except books), merchandise

Weight	Postage	Precancelled Stamp Required
More than 12 pieces to a pound	1c each piece	1c
12 or less than 12 pieces to a pound	12c each pound or fraction thereof	See table below

If precancelled stamps are used to pay the postage, use table below:

Weight of Piece	Pieces to a pound	Stamps Required
1 oz	12	1 c
2 "	8	1½c
2½ "	6	2 c
3 "	4 4/5	2½c
4 "	4	3 c
4½ "	3.43	3½c
5 "	3	4 c
6 "	2⅔	4½c
6½ "	2 2/5	5 c
7 "	2.18	5½c
8 "	2	6 c

Printed books, catalogs (24 or more pages), seeds, bulbs, roots, plants.

Weight	Postage	Precancelled Stamp Required
More than 8 pieces to a pound	1c each piece	1 c
8 or less than 8 pieces to a pound	8c each piece or fraction thereof	See table below

If postage is paid with precancelled stamps, use table below:

Weight of Piece	Pieces to a pound	Stamps Required
2 ozs.	8	1 c
3 "	5⅓	1½c
4 "	4	2 c
5 "	3.2	2½c
6 "	2⅔	3 c
7 "	2 2/7	3½c
8 "	2	4 c

All this information is as of Nov. 1, 1947 and is, of course, subject to change. Further data may be obtained from any post office.

Zone chart: parcel post (4th class) rates

Weight in lb.	Up to 150 mi.	150 to 300	300 to 600	600 to 1,000	1,000 to 1,400	1,400 to 1,800	Over 1,800
Zone	1-2	3	4	5	6	7	8
1	$0.08	$0.09	$0.10	$0.11	$0.12	$0.13	$0.15	$0.16
2	.09	.11	.12	.15	.18	.20	.24	.27
3	.09	.12	.14	.18	.23	.27	.33	.38
4	.10	.13	.16	.22	.28	.34	.42	.49
5	.10	.14	.18	.25	.34	.41	.52	.61
6	.11	.15	.20	.29	.39	.48	.61	.72
7	.11	.16	.22	.32	.44	.56	.70	.83
8	.12	.17	.24	.36	.50	.63	.79	.95
9	.12	.18	.26	.39	.56	.70	.89	1.06
10	.13	.19	.28	.43	.61	.77	.98	1.17
11	.13	.20	.30	.46	.66	.84	1.07	1.29
12	.14	.22	.32	.50	.72	.92	1.16	1.40
13	.14	.23	.34	.54	.77	.99	1.26	1.51
14	.15	.24	.36	.58	.82	1.06	1.35	1.63
15	.15	.25	.38	.61	.89	1.13	1.44	1.74
16	.16	.26	.40	.65	.94	1.21	1.53	1.85
17	.16	.27	.42	.68	.99	1.28	1.63	1.97
18	.17	.28	.44	.72	1.05	1.35	1.72	2.08
19	.17	.29	.46	.75	1.10	1.42	1.81	2.19
20	.18	.30	.48	.79	1.15	1.49	1.91	2.31
21	.18	.31	.50	.82	1.21	1.57	2.00	2.42
22	.19	.33	.53	.87	1.27	1.64	2.09	2.53
23	.19	.34	.55	.90	1.32	1.71	2.18	2.65
24	.20	.35	.57	.94	1.37	1.78	2.28	2.76
25	.20	.36	.59	.97	1.43	1.85	2.37	2.87
26	.21	.37	.61	1.01	1.48	1.93	2.46	2.99
27	.21	.38	.63	1.04	1.53	2.00	2.55	3.10
28	.22	.39	.65	1.08	1.60	2.07	2.65	3.21
29	.22	.40	.67	1.11	1.65	2.14	2.74	3.33
30	.23	.41	.69	1.15	1.70	2.21	2.83	3.44
31	.23	.42	.71	1.18	1.75	2.29	2.93	3.55
32	.24	.44	.73	1.23	1.81	2.36	3.02	3.67
33	.24	.45	.75	1.26	1.86	2.43	3.11	3.78
34	.25	.46	.77	1.30	1.92	2.50	3.20	3.89
35	.25	.47	.79	1.33	1.98	2.58	3.30	4.01
36	.26	.48	.81	1.37	2.63	2.65	3.39	4.12
37	.26	.49	.83	1.40	2.08	2.72	3.48	4.23
38	.27	.50	.85	1.44	2.14	2.79	3.57	4.35
39	.27	.52	.88	1.47	2.19	2.86	3.67	4.46
40	.28	.53	.90	1.51	2.25	2.94	3.76	4.57
41	.28	.54	.92	1.55	2.30	3.01	3.85	4.69
42	.29	.56	.94	1.59	2.36	3.08	3.94	4.80
43	.29	.57	.96	1.62	2.41	3.15	4.04	4.91
44	.30	.58	.98	1.66	2.46	3.22	4.13	5.03
45	.30	.59	1.00	1.69	2.52	3.30	4.22	5.14
46	.31	.60	1.02	1.73	2.58	3.37	4.32	5.25
47	.31	.61	1.04	1.76	2.63	3.44	4.41	5.37
48	.32	.62	1.06	1.80	2.69	3.51	4.50	5.48
49	.32	.63	1.08	1.83	2.74	3.58	4.59	5.59
50	.33	.64	1.10	1.87	2.79	3.66	4.69	5.71
51	.33	.65	1.12	1.91	2.84	3.73	4.78	5.82
52	.34	.67	1.14	1.95	2.90	3.80	4.87	5.93
53	.34	.68	1.16	1.98	2.96	3.87	4.96	6.05
54	.35	.69	1.18	2.02	3.01	3.94	5.06	6.16
55	.35	.70	1.21	2.05	3.07	4.02	5.15	6.27
56	.36	.71	1.23	2.09	3.12	4.09	5.24	6.39
57	.36	.72	1.25	2.12	3.17	4.16	5.34	6.50
58	.37	.73	1.27	2.16	3.23	4.23	5.43	6.61
59	.37	.74	1.29	2.19	3.29	4.31	5.52	6.73
60	.38	.75	1.31	2.24	3.34	4.38	5.61	6.84
61	.38	.76	1.33	2.27	3.39	4.45	5.71	6.95
62	.39	.78	1.35	2.31	3.45	4.52	5.80	7.07
63	.39	.79	1.37	2.34	3.50	4.59	5.89	7.18
64	.40	.80	1.39	2.38	3.55	4.67	5.98	7.29
65	.40	.81	1.41	2.41	3.62	4.74	6.08	7.41
66	.41	.82	1.43	2.45	3.67	4.81	6.17	7.52
67	.41	.83	1.45	2.48	3.72	4.88	6.26	7.63
68	.42	.84	1.47	2.52	3.78	4.95	6.36	7.75
69	.42	.85	1.49	2.55	3.83	5.03	6.45	7.86
70	.43	.87	1.51	2.60	3.88	5.10	6.54	7.97

AMERICA'S MOST COMPLETE DIRECT MAIL SERVICES

guaranteed mailing lists



All types of mailing lists built to specification. Every list carries a guarantee. Names and addresses available by type of business, territory and or financial rating. Clients may have mailings addressed from B-D lists and save the separate cost of the list.

BUCKLEY-DEMENT is a house of many services . . . each obtainable by itself or in combination with the others. Knowledge of advertising principles . . . unified control of production . . . and familiarity with postal rules make B-D services effective, fast and economical.

process letters



One of Chicago's best-equipped form letter departments. Typewritten letters reproduced quickly in as many colors as you want. Facsimile signatures reproduced accurately. Work carefully supervised for accuracy of alignment and match of color between name and address and body of form letter.

Buckley-Dement

ADVERTISING CORPORATION

707 Jackson Boulevard • Chicago 6 • Franklin 1710

typewriting . . . addressing



A quick, accurate service. Hundreds of skilled typists available to do all kinds of typewriting . . . letters . . . lists . . . addressing . . . fill-ins. A special technique for matching fill-ins with the multigraphed body of a letter. Pen-written addresses, signatures and matched fill-ins neatly done.



printing . . .

A complete up-to-the-minute printing plant. Buckley-Dement is exceptionally well equipped to print imprint or dealerize all types of sales literature, regardless of quantity.



mailing

A comprehensive service including gathering of the material, folding if necessary, enclosing in the envelope or container, sealing, weighing, stamping or metering, sacking and delivery to the post office on schedule. This service is not restricted to mailings produced by Buckley, Dement.



plate addressing

A service designed to save clients an investment in such equipment as addressing and embossing machines, steel cabinets and trays, and to save them floor space and the bother of maintaining their addressing plate files.



creative services

Thirty-three years in Direct Advertising and Sales Promotion has put B-D in an excellent position to help clients plan their direct advertising . . . whether it is an individual piece, a series, or a year's campaign.

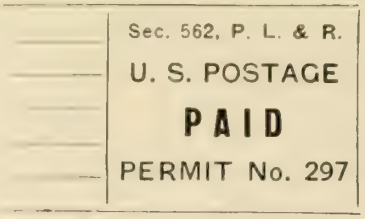


sampling by mail

Samples sent by mail to selected lists reach their destinations quickly and receive undivided attention. The accuracy of B-D mailing lists and the speed and capacity of B-D addressing and mailing services make the mailing of certain samples profitable in any quantity from hundreds to millions.

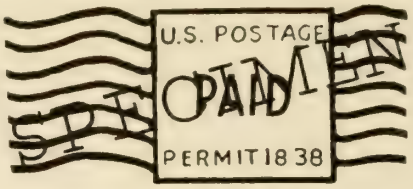
Bulk rate options for circular mail







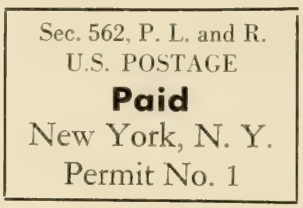
Sec. 562 P. L. & R.



Sec. 562 P. L. & R.

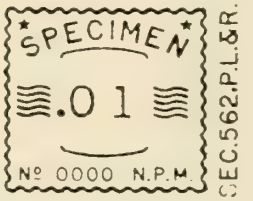


1c precancelled stamp with printed inscription "Sec. 562 P. L. & R." 200 pieces minimum. Facing, sorting, and tying required. 1c minimum up to 1⅓ oz. for each individual piece.



Printed indicia for 3rd class bulk mailing. 200 pieces minimum. Facing, sorting, and tying required. Rate 12c per lb. 1c minimum on each individual piece.





Section 562 P. L. & R.



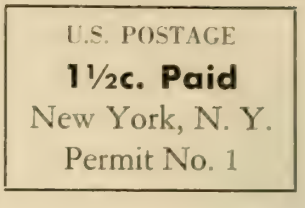


Postage meter indicia for 3rd class bulk mailings. 200 pieces minimum. Facing and sorting required. 1c minimum up to 1⅓ oz. an individual piece Separate statement of mailing required.

Straight 3rd class postage options

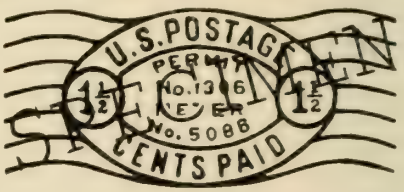


1½c uncancelled or precancelled stamp for ordinary 3rd class mail in unsealed envelopes. 20 identical pieces required. If in imitation of handwriting, typewriting, mimeograph, or multigraph, rate 1½c for each 2 oz. Mailed at post office window.



Printed indicia under permit for straight 3rd class mail. Rate 1½c for each 2 oz. 300 identical pieces required. Matter to be separated into states, faced, and tied in bundles. The postage must be paid at the time of mailing.



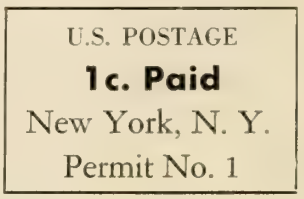




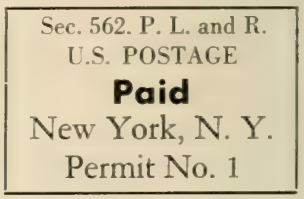


Regular 3rd class postage meter indicia. No date line in circle for 3rd class use unless indicia is printed on separate label or sticker affixed. Facing and tying required. Rate 1½c per each 2 oz.

Book rate options



Printed indicia under permit or 1c stamp for straight 3rd class book rate. Rate 2 oz. for 1c on books of 24 pages or more weighing 8 ozs. or less. Minimum of 300 pieces required under permit indicia; state separation, facing, tying required.



Bulk rate indicia for books of 24 pages or over weighing 8 ozs. or less, where 200 or more identical pieces or 20 pounds are mailed. Rate 8c per lb. Minimum 1c each. Facing, tying, and sorting are required.





Postage meter indicia for straight 3rd class rate on books of 24 or more pages weighing 8 ozs. or less. Rate 2 ozs. for 1c.



for ANOTHER Profit-Making DIRECT ADVERTISING CAMPAIGN by AHREND

. . . that spoke directly and personally to each prospect . . . that won because it *produced results.*

More than half a century of Ahrend direct advertising experience went into the creation of this prize-winner; this same "know-how" has won for Ahrend clients 23 National Awards in 4 years.

Let the D. H. Ahrend staff of experts plan *your* next campaign. It's the direct way, the economical way to *better results.*

Call MUrray Hill 4-3411 or Write TODAY!

AHREND SERVICE INCLUDES:
Sales Promotion Ideas
Planning Your Campaign
Writing Your Copy
Art and Design
Typography and Layout
Printing Catalogs & Brochures
Personalized Pieces
Ahrend Letters
Multigraphing
Mimeographing
Addressing and Mailing

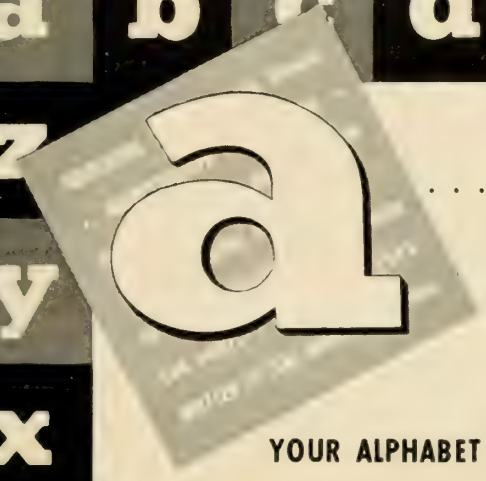
55 Years of Direct Advertising Progress

23 National Awards in the Past 4 Years

D. H. AHREND COMPANY
Creative Direct Advertising

333 EAST 44th STREET • NEW YORK 17, N. Y.

a b c d e f g h i j k l m n o p q r s t u v w x y z



. . . . . *is for* **All Under One Roof — every service for users of direct mail. One call — one order — one pickup — one delivery — one invoice — one payment! Take advantage of . . .**

YOUR ALPHABET OF DIRECT MAIL SERVICE . . . FROM A TO Z!

BE EFFICIENT—CALL EFFICIENT

Efficient **DIRECT MAIL SERVICE, INC.**

52 EAST 19th ST. • NEW YORK 3, N. Y. • GRamercy 3-2500

Postage meter machines

Production and cost data pertinent to twenty unit and meter models; units are purchased outright or rented while meters are rented on monthly basis

Compiled by Stanley Cartwright

To facilitate large quantity mailing of plates, mats, artwork, direct mail advertising material, etc., the shipping departments of most printers, platemakers, electrotypers, and agencies use postage meter machines.

The four major manufacturers of this equipment were producing, at the time this edition of the PRODUCTION YEARBOOK went to press, twenty models of machines. Prices given in the accompanying table may not be correct when the reader refers to them, but they serve to indicate the relative cost factors of the various hand-powered and electric-powered models available.

It is not always necessary to puchase a unit in order to use one. Some models are rented on a monthly basis of so much per meter and so much per unit. Most machines now available print tape. While some models handle just one denomination at a time, others will handle any six denominations and still other models will print any denomination from ½c to $9.99.

The accompanying table lists the production and cost data pertinent to twenty models made by the four leading manufacturers of postage meter equipment.

Manufacturer	Model	Power	Purchase price of unit[5]	Monthly rental of unit[5]	Monthly rental of meter[5]	Denominations on one meter	Print tape?	Speed per hour
International Postal Supply Co., Brooklyn, N. Y.	2	Electric	$750.00	$25.00	$7.50	Any six	Yes[1]	10,000
	4	Hand	125.00	4.00	6.00	Any six	Yes[2]	1,000
	4E	Electric	200.00	6.50	6.00	Any six	Yes[2]	2,000
	5	Electric	300.00	10.00	6.00	Any six	Yes[1]	6,000
National Cash Register Co., Dayton, O.	RP P-1924 (3-3) RP	Electric	[3]	10.00 for first two years, thereafter, $7.50	[3]	All ½c to $9.99	Yes	9,000
Comercial Controls Corp., Rochester, N. Y. (U. S. Postal Meter Division)	88	Electric Automatic Feed	610.00	Not rented	10.00	½c to $9.99 Omni	Yes[1]	10,500
	55	Electric Hand feed	310.00	Not rented	10.00	½c to $4.99 Omni	Yes[1]	1,500-2,000
	45	Hand	180.00	Not rented	8.00	½c to $1.99½ Omni	Yes[1]	1,200-1,500
	Y	Hand				Any four 1-15c	$25.00 additional	9,500
	YP	Electric	250.00		7.00	Any Single		
	420E	Electric	150.00		7.50	Any single[4]	No-Yes[4]	2,400-9,600[4]
	420H	Hand	125.00		5.00	Six Denominational Multiple 1c to 6c and higher		
Pitney-Bowes, Inc., Stamford, Conn.	AV	Electric				Multi-Denominational		12,000-15,000
	AV-HB	Electric				Multi-Denominational		12,000-15,000
	H	Hand				Multi-Denominational	Yes	Depending on operator
	RH	Hand				Omni-Denominational	Yes	Depending on operator
	RG	Electric				Omni-Denominational	Yes	Depending on operator
	RS	Electric				Omni-Denominational	Yes	10,000
	RM	Electric				Omni-Denominational	Yes	10,000

[1] Built-in tape unit.
[2] $50.00 less without built-in tape unit.
[3] Price is for rental of complete machine; Unit is integral with meter which cannot be sold, under Postal Regulations.
[4] Different model meters can be used on both machines.
[5] Current prices available from dealers.



I got a whole shelf full!

If every salesman wore a hatband that told what he was selling... my favorite bonnet the last few years would have been that ever-stylish "Convenience" model. For a while convenience sold almost anything.

But one nice thing about the Pitney-Bowes postage meter is that a salesman can always wear the hat that fits the situation. I got a whole shelf full!

Nobody can deny the convenience of a postage meter for office mailing or parcel post. You get rid of adhesive stamps . . . and separating, sticking, and locking up stamps. You always have postage in the meter, can print the exact amount needed. But there are other advantages well worth while.

Time Saving . . . for instance, in a one-girl office or a big mail room. The meter will print postage and seal envelopes at the same time—far faster than lick and stick methods.

Economy . . . rears its ugly head again. Time is worth a lot more, with all salaries higher, and the meter usually shows a saving in postage.

Postage Accounting . . . is a headache, until you get a meter which automatically keeps its records.

Postoffice Speed . . . When mail is metered it is already postmarked and cancelled, skips two postoffice steps, can make earlier trains and planes.

Advertising . . . is an extra. The meter die which prints postage and postmark, can also print a small ad on the envelope — publicize a product, service, slogan or cause.

Prestige . . . is another plus. Metered mail means a modern, efficient firm.

If you want to know what a postage meter can do, call our nearest office — I'll come over with my big hatbox . . . Or write us for an illustrated booklet.



PITNEY-BOWES Postage Meter

PITNEY-BOWES, INC., 5188 Pacific St., Stamford, Conn.

Originators of Metered Mail... largest makers of postage meters ... Offices in 63 principal cities in the United States and Canada.

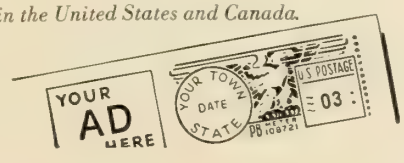


Chart of addressing machines

Details on the kinds of plates or stencils, type faces, list prices, speeds and automatic equipment now available for the principal models

Compiled by the editors

Symbols: A-automatic feed; HD-hand drive; HF-hand feed; PD-power drive.

Name of system Manufacturer's main office Material of plates or stencils, type size	Style No. addressing unit, price	Style No. embossing, stencil; price	Addressing unit	Avg. speed (estimated) Add.	Avg. speed (estimated) Emb.	Automatic selection addressing	List price: plates or stencils
Addressograph							
Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland, Ohio; also 329 Fifth Avenue, New York.	No. 700 $135	No. 6180 $399	HF HD	750	30	Visual selection by tabs, 24 tab positions	$8.20 per M (Approx.)
Card-index or one-piece metal plate. Standard typewriter type faces, elite or pica, and other larger type faces available.	No. 900 $235	No. 6280 $585	HF PD	1,200	60	Visual selection by tabs, 24 tab positions	Exact price of plates depends on size or style
	No. 1900 $765	No. 6380 $1,035	HF, PD AF	3,500	100	Mechanical automatic selection 60 tab posts	
Elliott							
Elliott Addressing Machine Company, Cambridge, Mass.; also 117 Leonard St., New York. Typewriter fiber stencil with three-ply laminated fiber frame, one-piece. Standard typewriter type faces, elite or pica, or any special faces on typewriter. Size and style of stencil varies with number of lines or character.	No. 80 $115	None (Uses attachment fitting any standard make and model typewriter for cutting stencils.)	HF, PD HD	1,500	125*	Mechanical attachment is available on most of models for automatic selection through holes punched in frame of fiber stencil. 120 hole positions Prints as well as addresses post cards	$10.00 per M for ½ x 3 stencils, up to $22.00 per M for 8 x 4 3/8 size cuts Cardvertiser uses standard stencils, as above
	No. 125 $175		AF, PD HD	7,500			
	No. 300 $475 And 50 other s		HF PD	4,800			
	Cardvertiser Nos. 9, 85, 100, 150 $95-$195		AF HF HD PD				
Pollard-Alling							
Pollard-Alling Manufacturing Co., 220 West 19th St., New York. One-piece metal (aluminum) plate. Plates made with hinges to link together, forming chain of plates. Standard type face is elite typewriter caps. Two sizes gothic also available.	H addresser $1,100	Dial Reliefograph (power drive) $900	AF HF PD	3,000	70	Visual selection embossed keys or colored paint marks on plates. No mechanical selecting device	$3.80 per M standard plate)
	Automatic envelope addresser $4,800	Keyboard reliefograph (power drive) $1,650	AF PD	12,000	200		
	Combination wrapper addresser $4,800 "S" $1,250	Style K.X. Automatic and strip lister $1,650	AF † PD	12,000 40,000 10,000			
	Automatic marginal addresser	Magazine unit $6,000 Newspaper unit $6,600	AF PD	12,000 12,000		Visual selection from numbered plates	
Speedaumat							
Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland, Ohio; also 329 Fifth Avenue, New York. One-piece horsehead zinc plate. Standard pica or elite typewriter type; 8½ pt. sans serif best for low cost.	No. 2600 List price: on application	No. 6640 List price: on application	AF HF PD	7,000	75	Mechanical automatic selecting device, using notches cut in edge of plate	$3.25 per M to $5.25 per M (depending on size and quantity)

*Speed in stencil cutting depends on speed of the typist. Average is same as addressing envelopes by typewriter.

†From roll stock. (Note: All prices F.O.B. main office of manufacturer and subject to change since compilation of this chart.)

RING THE BELL EVERY TIME

with **DE HAAN** *DIRECT MAIL SERVICE!*

MULTIGRAPHING • MIMEOGRAPHING • PROCESSED LETTERS
ADDRESSING • HAND SIGNING • MAILING • FILLING-IN

We have served the graphic arts with quality and quantity production for over 25 years. Call in our representative. Let us help you with our *complete mailing service day or night.*



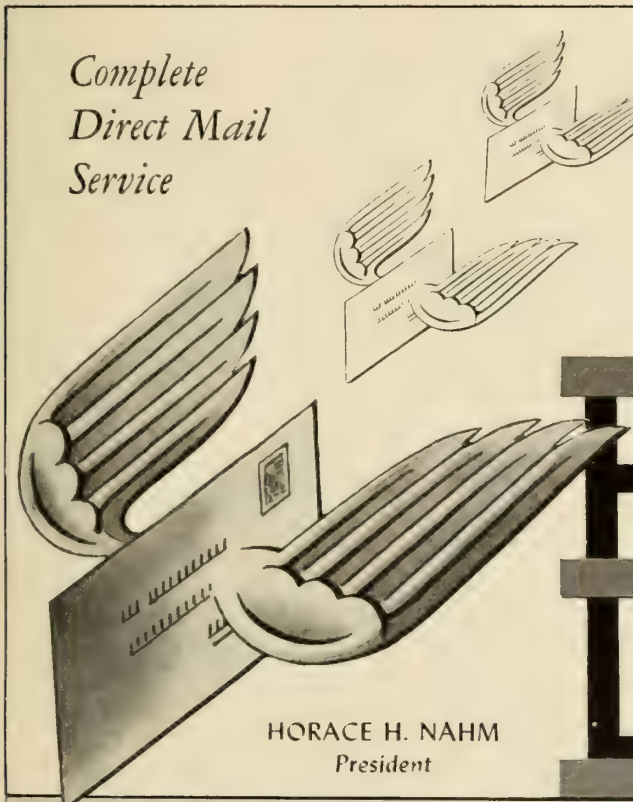
DE HAAN, Inc.

60 EAST 11th STREET, NEW YORK 3, N.Y.

ORegon 4-6600

A Complete Direct Mail Service For Over 25 Years

Complete Direct Mail Service



HOOVEN INDIVIDUALLY TYPEWRITTEN LETTERS • NAHMCO PROCESS LETTERS
MULTIGRAPHING • MIMEOGRAPHING
ADDRESSING • SIGNING • MAILING
OFFSET

NAHM PHOTOGRAVURE COMPANY
Creators of Fine Letterheads, Envelopes and Business Cards

HORACE H. NAHM
President

HOOVEN LETTERS INC

352 FOURTH AVENUE, NEW YORK 10, N.Y. • TELEPHONE LEXINGTON 2-6162

Shipping times and rates

Railway Express charges for shipments of from 1 to 50 pounds from New York and Chicago to 25 other cities, rail, air ,truck, postal times listed

Compiled by C. T. Ferguson

Chicago to:	1 lb.	2 lbs.	3 lbs.	4 lbs.	5 lbs.	10 lbs.	25 lbs.	50 lbs.
Albany, N. Y.	.65	.65	.65	.65	.65	.70	.95	1.40
Atlanta, Ga.	.65	.70	.75	.80	.85	1.05	1.67	2.83
Baltimore, Md.	.65	.65	.65	.65	.65	.70	1.01	1.51
Boston, Mass.	.65	.65	.65	.65	.65	.72	1.06	1.62
Buffalo, N. Y.	.65	.65	.65	.70	.70	.80	1.23	1.95
Chicago, Ill.	.65	.70	.75	.80	.85	1.05	1.60	2.69
Cincinnati, Ohio	.65	.65	.70	.75	.75	.91	1.51	2.53
Cleveland, Ohio	.65	.65	.70	.75	.75	.90	1.40	2.31
Dallas, Tex.	.65	.70	.75	.85	.90	1.26	2.41	4.32
Denver, Colo.	.65	.75	.80	.90	1.00	1.37	2.68	4.87
Detroit, Mich	.65	.65	.70	.75	.75	.91	1.51	2.53
Indianapolis, Ind.	.65	.70	.75	.80	.85	1.05	1.57	2.64
Jacksonville, Fla.	.65	.70	.75	.80	.85	1.05	1.72	2.94
Kansas City, Mo.	.65	.70	.75	.85	.90	1.10	1.97	3.44
Los Angeles, Calif.	.70	.76	.89	1.02	1.16	1.81	3.78	7.06
Milwaukee, Wis.	.65	.70	.75	.80	.85	1.05	1.64	2.78
Minneapolis, Minn.	.65	.70	.75	.85	.90	1.10	2.00	3.49
New Orleans, La.	.65	.70	.75	.85	.90	1.11	2.04	3.57
Omaha, Neb.	.65	.70	.75	.85	.90	1.12	2.05	3.60
Philadelphia, Pa.	.65	.65	.65	.65	.65	.70	.95	1.40
Pittsburgh, Pa.	.65	.65	.65	.70	.70	.80	1.23	1.95
Rochester, N. Y.	.65	.65	.65	.70	.70	.80	1.17	1.84
St. Louis, Mo.	.65	.70	.75	.80	.85	1.05	1.65	2.80
San Francisco, Calif.	.70	.77	.91	1.05	1.19	1.87	3.93	7.35
Seattle, Wash.	.70	.76	.89	1.02	1.16	1.81	3.78	7.06

New York to:	1 lb.	2 lbs.	3 lbs.	4 lbs.	5 lbs.	10 lbs.	25 lbs.	50 lbs.
Albany, N. Y.	.65	.70	.75	.80	.85	1.05	1.57	2.64
Atlanta, Ga.	.65	.70	.75	.80	.85	1.05	1.57	2.64
Baltimore, Md.	.65	.65	.70	.75	.75	.92	1.54	2.58
Boston, Mass.	.65	.70	.75	.80	.85	1.05	1.64	2.78
Buffalo, N. Y.	.65	.65	.70	.75	.75	.90	1.36	2.23
Cincinnati, Ohio	.65	.65	.65	.70	.70	.80	1.12	1.73
Cleveland, Ohio	.65	.65	.65	.70	.70	.80	1.17	1.84
Dallas, Tex.	.65	.70	.75	.80	.85	1.05	1.80	3.11
Denver, Colo.	.65	.70	.75	.85	.90	1.10	1.90	3.30
Detroit, Mich.	.65	.65	.65	.70	.70	.80	1.12	1.73
Indianapolis, Ind.	.65	.65	.65	.65	.65	.70	1.01	1.51
Jacksonville, Fla.	.65	.70	.75	.80	.85	1.05	1.80	3.11
Kansas City, Mo.	.65	.65	.70	.75	.75	.90	1.38	2.25
Los Angeles, Calif.	.70	.75	.85	.95	1.05	1.53	3.07	5.64
Milwaukee, Wis.	.65	.65	.65	.65	.65	.70	.95	1.40
Minneapolis, Minn.	.65	.65	.70	.75	.75	.90	1.36	2.23
New Orleans, La.	.65	.70	.75	.80	.85	1.05	1.72	2.94
New York, N. Y.	.65	.70	.75	.80	.85	1.05	1.60	2.69
Omaha, Neb.	.65	.65	.70	.75	.75	.90	1.42	2.34
Philadelphia, Pa.	.65	.70	.75	.80	.85	1.05	1.57	2.64
Pittsburgh, Pa.	.65	.65	.70	.75	.75	.90	1.32	2.14
Rochester, N. Y.	.65	.65	.70	.75	.75	.90	1.40	2.31
St. Louis, Mo.	.65	.65	.65	.70	.70	.80	1.12	1.73
San Francisco, Calif.	.70	.75	.85	.95	1.05	1.57	3.16	5.83
Seattle, Wash.	.70	.75	.85	.95	1.05	1.51	3.03	5.57

Note: The Railway Express Agency maintains a special low level of rates and charges applying to certain types of printed matter, such as advertising material, blanks, catalogs, books, pamphlets, etc. The charges in many instances are lower than those quoted herein applicable to traffic rates first class. Interested shippers who have occasion to send out such printed matter as mentioned above should communicate with agents at shipping points in order to obtain latest and most accurate charges on this class of traffic.

Railway Express service includes:

1. Pick-up and delivery in all cities and principal towns, at no extra charge.
2. Free insurance up to $50.00, or 50c per pound. Ten cents for each additional $100.00, or fraction thereof.
3. Receipts to shipper and one from consignee showing time of delivery.
4. Shipments can be sent express prepaid or collect.
5. C.O.D.'s collected and promptly remitted.

PUBLISHERS BOOK BINDERY, INC.

118 LAFAYETTE STREET NEW YORK 13, N.Y. CANAL 6-3115-6-7



Edition and Commercial Binding

IN THE GRAND CENTRAL ZONE...

- **TRUCKING**
- **EXPRESSING**
- **MOVING**
- **SHIPPING**
- **STORAGE**

Speedy Service for the Graphic Arts

•

Specializing in Printers, Binders, Mailers Service

A A TRUCKING CO.

214 EAST 45th STREET • VAnderbilt 6-1161

Shipping distances and time, continued

From New York to	Rail-road dist. miles	First class & spec. del. all mail hours*	Third class, parcel post days†	Air mail, hours*‡	Rail express, days†	Rail, days	Truck, days††	Air express hours§
Albany, N. Y.	143	3	1	1	1	1	1	1
Atlanta, Ga.	864	21	3	4	2	3	2	4½
Baltimore, Md.	187	**	1	**	1	1	1	1¼
Boston, Mass.	229	6	1	1	1	1	1	1
Buffalo, N. Y.	410	10	1	2	1	1	1-2	2¼
Chicago, Ill.	908	16	2	4	2	3	3	3
Cincinnati, Ohio	756	16	2	5	2	3	2	3¾
Cleveland, Ohio	576	12	2	2	2	2	2-3	2½
Dallas, Texas	1739	38	4	9	3	5	6	6¾
Denver, Colo.	1942	35	4	10	3	6	5	7½
Detroit, Mich.	661	14	2	4	2	2	2-3	3
Indianapolis, Ind.	811	16	2	5	2	3	2-3	4
Jacksonville, Fla.	983	23	3	4	2	4	3-4	4
Kansas City, Mo.	1336	24	3	7	2	4	4	4¾
Los Angeles, Calif.	3135	68	5	16	4	10	8	8¾
Milwaukee, Wis.	993	18	3	4	2	4	4	4¼
Minneapolis, Minn.	1310	27	3	6	2	5	5	5
New Orleans, La.	1342	32	3	7	3	5	4	6
Omaha, Neb.	1396	27	3	6	2	5	4	5¼
Philadelphia, Pa.	90	**	1	**	1	1	1	¾
Pittsburgh, Pa.	439	10	1	2	1	2	2	2¼
Rochester, N. Y.	370	8	1	2	1	1	1	2½
St. Louis, Mo.	1052	21	2	5	2	3	3	4¾
San Francisco, Calif.	3169	73	5	14	4	10	9	11¼
Seattle, Wash.	3096	80	5	17	4	10	7-8	13¼
From Chicago to								
Albany, N. Y.	819	13	2	5	1	3	3	6
Atlanta, Ga.	735	19	2	3	1	2	3-4	4
Baltimore, Md.	797	15	2	4¾	1	3	3	5
Boston, Mass.	1010	19	2	5½	2	3	3	5¾
Buffalo, N. Y.	536	8	1	2¼	1	2	2	3
Cincinnati, Ohio	300	6	1	1½	1	1	1-2	2½
Cleveland, Ohio	340	6	1	1¾	1	1	1-2	2¾
Dallas, Texas	973	22	2	4½	2	4	4	5½
Denver, Colo.	1034	16	2	5	1	3	2-3	5
Detroit, Mich.	284	5	1	1½	1	1	1	2½
Indianapolis, Ind.	184	4	1	1	1	1	1	1¼
Jacksonville, Fla.	1085	31	2	5½	2	3	4-5	7
Kansas City, Mo.	450	10	1	2	1	2	2	2¼
Los Angeles, Calif.	2227	40	3	8½	3	7	6	9
Milwaukee, Wis.	85	2	1	¾	1½ hrs.	1	1	¾
Minneapolis, Minn.	402	7	1	2¼	1	2	1-2	2½
New Orleans, La.	922	17	2	5	1	2	2-3	6½
New York, N. Y.	908	16	2	3	1	3	3	4
Omaha, Neb.	488	8	1	3	1	2	2	3
Philadelphia, Pa.	818	15	2	3¾	1	3	3	4¼
Pittsburgh, Pa.	469	8	1	2½	1	2	2	3½
Rochester, N. Y.	581	11	1	4	1	2	3	4
St. Louis, Mo.	284	5	1	1½	1	1	1	1¾
San Francisco, Calif.	2261	50	3	10½	3	7	6	10½
Seattle, Wash.	2188	49	3	11	3	7	5-6	13¾

* Allowance to be made for postal collection and delivery: If mailed in Post Office—3 hours; if mailed in box—5 hours.

† This is minimum time required. Sometimes one more day is involved.

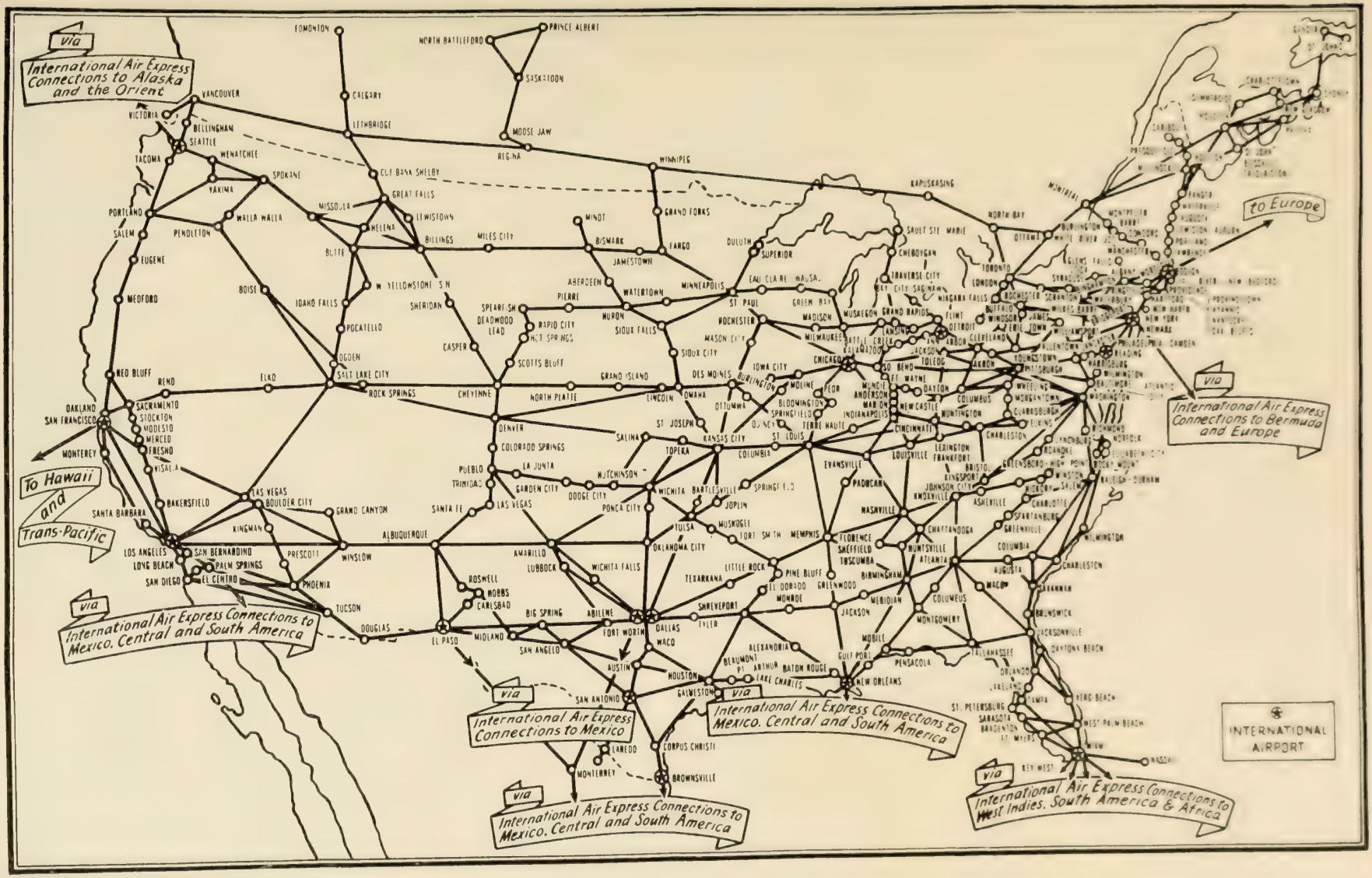
‡ Air mail hours given as flight hours. Fastest flight is listed.

§ Special Free Pickup and Special Delivery—Air Express hours from airport to airport—average time from city office to airport for above cities is 30 minutes. For additional information telephone Railway Express Agency.

** Time not available.

†† Data not precise but reasonably reflects the situation.

Map of Air Express routes



Air Express services:

1. Free pick-up and delivery service provided on all shipments.
2. Shipments are forwarded by the first out-bound plane from each airport.
3. Free insurance coverage up to $50. Ten cents for each additional $100 or fraction.
4. A tracer service, as all shipments are handled under signatures.
5. Special Delivery at destination, including night delivery at many points.
6. International Air Express provides [illegible] foreign countries, as designated by the scrolls on the above map.
7. Shipments are carried on the passenger planes of all regular [illegible]
8. Air Express is particularly valuable [illegible] ment of printing plates, plastic plates, advertising [illegible]

Air Express rates

Weight in pounds (see note)	Air Express rate scales as published in Section 3 of Tariff as amended																							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Miles	149	249	349	449	549	649	749	849	949	1049	1149	1249	1349	1449	1549	1649	1749	1849	1949	2049	2149	2249	2349	2350 or over
	Rate in cents																							
1 or less	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1¼	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1½	100	100	100	100	101	102	102	103	103	104	105	105	106	106	107	108	108	109	109	110	111	111	112	113
1¾	100	100	101	102	104	105	107	108	109	111	112	113	115	116	118	119	120	121	123	124	126	127	129	130
2	100	100	102	105	107	109	111	113	115	117	120	122	124	126	128	130	132	135	137	139	141	143	145	147
2¼	100	101	104	107	110	112	115	118	121	124	127	130	133	135	139	142	144	147	150	153	156	159	162	166
2½	100	101	105	109	112	116	120	123	127	131	134	138	142	145	149	153	156	160	164	168	171	175	179	184
2¾	100	102	106	111	115	120	124	128	133	137	142	146	151	155	160	164	169	173	177	182	186	191	195	203
3	100	102	108	113	118	123	128	134	139	144	149	155	160	165	170	175	181	186	191	196	201	207	212	221
3¼	100	103	109	115	121	127	133	139	145	151	157	163	169	175	181	187	193	199	205	211	217	223	229	239
3½	100	103	110	117	124	130	137	144	151	157	164	171	178	184	191	198	205	211	218	225	232	238	247	258
3¾	100	104	112	119	127	134	142	149	157	164	172	179	187	194	202	209	217	224	232	239	247	254	265	276
4	100	105	113	121	129	138	146	154	163	171	179	187	196	204	212	220	229	237	245	254	262	270	282	295
4¼	100	105	114	123	132	141	150	159	168	177	187	196	205	214	223	232	241	250	259	268	277	287	300	313
4½	100	106	115	125	135	145	155	165	174	184	194	204	214	223	233	243	253	263	272	282	292	304	318	332
4¾	100	106	117	127	138	148	159	170	181	191	201	212	223	233	244	254	265	275	286	297	307	321	335	350
5	100	107	118	129	142	152	163	175	186	198	209	220	232	243	254	266	277	288	300	311	322	338	353	368
5½	100	108	121	134	146	159	172	185	198	211	224	237	250	262	274	288	301	314	327	340	355	371	388	405
6	100	109	123	138	152	167	181	195	210	224	239	253	267	282	296	311	325	340	354	368	387	405	424	442
6½	100	110	126	142	158	174	190	206	222	238	254	269	285	301	317	333	349	365	381	399	419	439	459	479
7	100	111	128	146	163	181	198	216	233	251	268	286	303	321	338	356	373	391	408	430	451	473	494	516
7½	100	112	131	150	169	188	207	226	245	264	283	302	321	340	359	378	397	416	437	461	484	507	530	553
8	100	113	134	154	175	195	216	236	257	278	298	319	339	360	380	401	422	442	467	491	516	540	565	589
8½	100	114	136	158	180	203	225	247	269	291	313	335	357	379	401	424	446	470	496	522	548	574	600	626
9	100	115	139	163	186	210	233	257	281	304	328	352	375	399	422	446	470	497	525	553	580	608	635	663
9½	100	116	141	167	192	217	242	267	292	318	343	368	393	418	443	469	496	525	554	583	612	642	671	700
10	100	117	144	171	198	224	251	278	304	331	358	384	411	438	465	491	522	553	583	614	645	675	706	737
11	100	120	149	179	209	239	268	298	328	358	387	417	447	477	507	540	574	608	642	675	709	743	777	810
12	100	122	155	187	220	253	286	319	352	384	417	450	483	516	553	589	626	663	700	737	774	810	847	884
13	100	124	160	196	232	267	303	339	375	411	447	483	519	559	599	639	678	718	758	798	838	878	918	958

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Air Express rates, continued

Weight in pounds (see note)	Air Express rate scales as published in Section 3 of Tariff as amended																							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Miles	149	249	349	449	549	649	749	849	949	1049	1149	1249	1349	1449	1549	1649	1749	1849	1949	2049	2149	2249	2349	2350 or over
	Rate in cents																							
14	100	126	165	204	243	282	321	360	399	438	477	516	559	602	645	688	731	774	817	860	903	946	989	1032
15	100	128	170	212	254	296	338	380	422	465	507	553	599	645	691	737	783	829	875	921	967	1013	1059	1105
16	100	130	175	220	266	311	356	401	446	491	540	589	639	688	737	786	835	884	933	982	1032	1081	1130	1179
17	100	132	181	229	277	325	373	422	470	522	574	626	678	731	783	835	887	939	992	1044	1096	1148	1200	1253
18	100	135	186	237	288	340	391	442	497	553	608	663	718	774	829	884	939	995	1050	1105	1160	1216	1271	1326
19	100	137	191	245	300	354	408	467	525	583	642	700	758	817	875	933	992	1050	1108	1167	1225	1283	1342	1400
20	100	139	196	254	311	368	430	491	553	614	675	737	798	860	921	982	1044	1105	1167	1228	1289	1351	1412	1474
21	100	141	201	262	322	387	451	516	580	645	709	774	838	903	967	1032	1096	1160	1225	1289	1354	1418	1483	1547
22	100	143	207	270	338	405	473	540	608	675	743	810	878	946	1013	1081	1148	1216	1283	1351	1418	1486	1553	1621
23	100	145	212	282	353	424	494	565	635	706	777	847	918	989	1059	1130	1200	1271	1342	1412	1483	1553	1624	1695
24	100	147	221	295	368	442	516	589	663	737	810	884	958	1032	1105	1179	1253	1326	1400	1474	1547	1621	1695	1768
25	100	154	230	307	384	461	537	614	691	768	844	921	998	1075	1151	1228	1305	1382	1458	1535	1612	1689	1765	1842
26	100	160	239	319	399	479	559	639	718	798	878	958	1038	1117	1197	1277	1357	1437	1517	1596	1676	1756	1836	1916
27	100	166	249	332	414	497	580	663	746	829	912	995	1078	1160	1243	1326	1409	1492	1575	1658	1741	1824	1906	1989
28	100	172	258	344	430	516	602	688	774	860	946	1032	1117	1203	1289	1375	1461	1547	1633	1719	1805	1891	1977	2063
29	100	178	267	356	445	534	623	712	801	890	979	1068	1157	1246	1335	1424	1514	1603	1692	1781	1870	1959	2048	2137
30	100	184	276	368	461	553	645	737	829	921	1013	1105	1197	1289	1382	1474	1566	1658	1750	1842	1934	2026	2118	2210
31	100	190	286	381	476	571	666	761	857	952	1047	1142	1237	1332	1428	1523	1618	1713	1808	1903	1999	2094	2189	2284
32	100	196	295	393	491	589	688	786	884	982	1081	1179	1277	1375	1474	1572	1670	1768	1867	1965	2063	2161	2260	2358
33	101	203	304	405	507	608	709	810	912	1013	1114	1216	1317	1418	1520	1621	1722	1824	1925	2026	2128	2229	2330	2431
34	104	209	313	418	522	626	731	835	939	1044	1148	1253	1357	1461	1566	1670	1774	1879	1983	2088	2192	2296	2401	2505
35	107	215	322	430	537	645	752	860	967	1075	1182	1289	1397	1504	1612	1719	1827	1934	2042	2149	2256	2364	2471	2579
36	111	221	332	442	553	663	774	884	995	1105	1216	1326	1437	1547	1658	1768	1879	1989	2100	2210	2321	2431	2542	2648
37	114	227	341	454	568	682	795	909	1022	1136	1249	1363	1477	1590	1704	1817	1931	2045	2158	2272	2385	2499	2613	2726
38	117	233	350	467	583	700	817	933	1050	1167	1283	1400	1517	1633	1750	1867	1983	2100	2217	2333	2450	2567	2683	2800
39	120	239	359	479	599	718	838	958	1078	1197	1317	1437	1556	1676	1796	1916	2035	2155	2275	2395	2514	2634	2754	2874
40	123	246	368	491	614	737	860	982	1105	1228	1351	1474	1596	1719	1842	1965	2088	2210	2333	2456	2579	2702	2824	2947
Over 40 lbs. per lb. in cents	**3.07**	**6.14**	**9.21**	**12.28**	**15.35**	**18.42**	**21.49**	**24.56**	**27.63**	**30.70**	**33.77**	**36.84**	**39.91**	**42.98**	**46.05**	**49.12**	**52.19**	**55.26**	**58.33**	**61.40**	**64.47**	**67.54**	**70.61**	**73.68**

Note: Where exact weight of shipment under 10 pounds is not shown, assess charge for next higher weight unit in this table. On shipments weighing over 10 pounds, fractions of a pound will be charged for as a full pound.

In computing charges on shipments over 40 pounds when fractions occur in the total, discard amounts of less than one-half cent and add one cent when the fraction represents one-half cent or more.

Exception: These rates do not apply to shipments of gold coin, gold bullion, paper currency, platinum and other precious metals (except silver), nor to magazines, newspapers or other periodicals. For rates, call your local Railway Express agent.

Duplication methods

How and when to use stencil, gelatin and liquid duplicators, letterpress and offset equipment, automatic typewriters and photocopying methods

Compiled by the editors

Style and model	Typical method of operation	Relative quality in performance	Production hints
Stencil **Speed:** 165-250 per minute. **Range:** Up to 14x18". **Maximum number of copies:** 2,000-5,000 per stencil, except wax, which is 400. Depends on stencil, copy, paper, duplicator, etc. **Cardvertiser:** Elliott Addressing Machine Company, Cambridge, Mass. **Flexograph:** The Heyer Corporation, Chicago. **Lettergraph:** The Heyer Corporation, Chicago. **Mimeograph:** A. B. Dick Company, Chicago. **Niagara:** Niagara Duplicator Company, New York City. **Post-O-Graf:** Post-O-Graf, Inc., Trucksville, Pa. **Rotospeed:** The Rotospeed Company, Dayton, Ohio. **Spartan Chief:** Post-O-Graf, Inc., Trucksville, Pa. **Speed-O-Print:** Speed-O-Print Corporation, Chicago. **Tempograph:** Milo Harding Company, Ltd., Los Angeles, Calif.	**For typing:** 1. Remove or release typewriter ribbon. 2. Clean type before typing on stencil. 3. Insert and type on stencil sheet. **For tracing:** 1. Place stencil sheet on illuminated drawing board. 2. Position copy to be traced under stencil sheet. 3. Draw with stylus. **For running:** 1. Remove cushion sheet. 2. Attach stencil to duplicator cylinder. 3. Adjust paper on feed table. 4. Feed paper between impression roller and stencil-covered cylinder to transmit stencilized image to paper.	**Wax stencil:** For runs of 300 to 400. **Dry stencil:** Used when high quality copy and/or illustrative work is desired. Will accept typings, tracings, and die impressions. Will produce thousands of copies. **Photomechanical stencil:** A light-sensitive stencil sheet for copy too complicated for ordinary stencilization. Can be prepared on job basis by manufacturer, or in user's office on his own equipment. Process in latter case is similar to blueprinting except that resulting stencil is source of hundreds of thousands of copies. Copy may consist of any line drawing on translucent paper, tracing cloth, or film.	**Paper:** 1. Should be of sufficiently low absorbency to reduce offset; otherwise, copies should be interleaved. 2. Must possess lint-free surface to prevent loose fibers from linting stencil. 3. Must lie flat for rapid, trouble-free feeding. 4. Must have accurate trim for consistent registration. 5. Grain should run long way. **Ink:** 1. Inks should be carefully selected, as different ones are designed for different conditions. 2. Special water-soluble ink is available where show-through and smudging must be minimized; this ink is effective only for cellulose stencils. 3. Manufacturer's recommendations should be followed on type and speed of machine and kind of work to be produced.
Flat bed gelatin hectograph **Speed:** Hand, 12 per minute; carriage, 50 per minute; depends on sheet size, etc. **Sheet range:** 9x14 to 22x34" full copying surface; larger sizes on special order. **Maximum number of copies:** 150. Depends on model and writing medium used. **Ditto:** Ditto, Inc., Chicago. **Heyer:** The Heyer Corporation, Chicago. **Speedograph:** Beck Duplicator Company, New York City. **Vivid:** L. C. Smith & Corona Typewriters, Inc., Syracuse, N. Y.	1. Master is typed, written or drawn on hard-surfaced paper with typewriter ribbon, carbon paper, pencil, fluid ink, or printer's ink. 2. Master is placed in carriage of machine that lays it face down in contact with gelatin composition, where it is allowed to remain for a few seconds. 3. Copy sheets are placed in contact with gelatin by machine carriage. Ink on gelatin reproduces message on copy sheet. 4. As many as eight colors, in solid blocks or lines, can be reproduced in one operation.	Brightness of copies decreases as maximum length of run is reached. Quality is lasting, since ink does not rest on paper's surface, but is absorbed into paper. Reprints are possible, with master being used as many as eight times. This is a common practice. Cost per copy is less than any other duplicating method for 5 to 150 copies.	**Paper:** 1. Hard-surfaced or coated preferred. 2. Special coated duplicator paper gives sharper and brighter, but fewer, impressions. **Gelatin:** 1. Must stand 4 to 24 hours before re-use. **Copy preparation:** 1. Ink furnishes brightest copy, longest run, 150 copies; carbon, 100 copies; ribbon, 75; pencil, 50. Each has specific use. 2. Different quality carbon paper or ribbon used for varying quantities.
Rotary gelatin hectograph **Speed:** 75 per minute. **Range:** Up to 14x18". **Maximum number of copies:** To 150. **Autocopy:** Autocopy, Inc., Chicago. **Ditto:** Ditto, Inc., Chicago. **Heyer:** The Heyer Corporation, Chicago. **Speedograph:** Beck Duplicator Company, Inc., N. Y. C.	1. Copy is prepared as in flat hectographing. 2. Gelatin film is attached to rotating cylinder that delivers impression sheet automatically. 3. Uses a 9x15" film and 9x15" to 14x17" gelatin roll.	As in flat hectographing.	**Paper:** 1. Should be smooth with not-too-absorbent surface. 2. Uncoated paper preferred, but coateds will do for short runs. **Copy preparation:** 1. Pencil, ink, ribbon, and carbon may be used.

[Continued on page 362]

Duplication methods, continued

Style and model	Typical method of operation	Relative quality in performance	Production hints
Liquid **Speed:** 75 per minute. **Sheet range:** Up to 15x17". **Maximum number of copies:** Up to 300. **Beck:** Beck Duplicator Company, New York City. **Copy-Rite:** Wolber Duplicator & Supply Company, Chicago. **Ditto:** Ditto, Inc., Chicago. **Standard Fluid Process:** Standard Duplicating Machines Corporation, Everett, Mass.	1. Master is made on high finish coated stock. 2. Sheet of fluid duplicating carbon paper is placed in reverse position behind master sheet. As master is typed or written, a raised negative impression is formed on back of master sheet. 3. Master sheet is placed in drum of machine. 4. Each copy sheet is fed to machine and is slightly moistened with a special fluid before it comes in contact with master. As this contact is made, copy sheet removes a tiny layer of original carbon deposit, which then appears on copy sheet. 5. Master may be prepared in typewriter with or without regular Black Record ribbon. When ribbon is used, heavier characters appear on copies. 6. For drawn originals, uncarbonized side of carbon sheet is placed on hard, smooth surface. Blank master is placed over it and drawn upon directly with hard stylus.	Difference between first and last copy is discernible regardless of degree of liquid used or quality of master. Legibility decreases slightly after 100 to 150 copies. Masters may be re-used until the negative carbon deposit has been exhausted. Cost per copy is less than stencil, more than gelatin process.	**Paper:** 1. Absorbency and smooth finish essential, for unless copy paper is sufficiently absorbent it will carry too much fluid on surface and apply too much to master. 2. Bond paper may be used. 3. Twenty-pound stock preferred for the run, 24-pound for master copy. 4. Grain should run in direction sheet is traveling. **Carbon:** 1. Only medium that can be used in preparing master copy. 2. Purple carbon is best. **Special combination:** 1. Combined hectograph carbon and master copy sheet eliminates handling of sheet by operator, and resultant smudging. 2. "Master-Set," sold by Ditto, Inc.; "Hectomastergraph," General Manifold Company, Franklin, Pa.; Standard "Carbon Master Units," Standard Duplicating Machines Corporation; "Unit Master Sets," Wolber Duplicating and Supply Company.
Letterpress, rotary **Speed:** 1,000-5,000 per hour. **Sheet range:** 3x5 to 17x17". **Maximum number of copies:** 50,000; up to 200,000 with all new type. **Davidson Dual Duplicator:** Davidson Manufacturing Company, Chicago (Equipped for both offset and relief duplicating). **Multigraph:** Addressograph-Multigraph Corporation, Cleveland, Ohio.	1. Type is set or stereotype, electrotype, or rubber plate made. 2. Special equipment for composing may be purchased or used through manufacturer's agencies. 3. Plate or type, held in channeled segment, is inked by roller. Printing also can be done through inked ribbon wrapped around cylinder. 4. Impression roll presses paper against cylinder.	Uniform impression is comparable in appearance to good typewriter; may be matched with typewriter fill-in. Available attachments include numbering heads, perforator, and slitter. Signature can be done in colored ink from rubber die.	**Paper:** 1. Any bond, ledger, or writing. **Printing:** 1. Prints on both sides. 2. Reproduces color. 3. Requires cuts or electros of special gauge and finish for illustrations. Can use curved electros, rubber plates, type, rules. 4. See Printing Press Specification Chart for speeds, sheet sizes, etc.
Offset **Speed:** Up to 5,100 per hour. **Sheet range:** 3¼x5½ to 14x20". **Maximum number of copies:** 25,000 to one side of the best plate. **Davidson Dual Duplicator:** Davidson Manufacturing Company, Chicago (Equipped for both offset and relief duplicating). **Multigraph Duplicator, Multilith Process:** Addressograph-Multigraph Corporation, Cleveland, Ohio.	**Direct:** 1. Paper-like masters are prepared with pen, pencil, typewriter, or any writing implement. 2. Master clamped to cylinder is alternately moistened and inked. 3. Moisture adheres to unprepared surface of master, repelling ink. 4. Inked surface imprints on rubber blankets. 5. Blankets offset impression to paper. **Indirect:** 1. Copy is typed on paper through strong black ribbon; carbon ribbon often is used. 2. Page is photographed. 3. Negative is transferred to sensitized plate. 4. Plate clamped to cylinder; procedure then same as above	Both direct image and photographic process faithfully reproduce original copy for both line and halftone subjects.	**Paper:** 1. Any stock that is used in offset printing. **Printing:** 1. Special ribbons, carbons, fluids, and powders required. 2. Plate surface is receptive to crayon, ink, fabric, typewriter ribbon, carbon, tracing, or any greasy material. 3. Prints on both sides of paper 4. Reproduces hand-letterwork, photographs, color, and type proofs. Copy may be enlarged or reduced photographically. Type script has been found wasteful of page area; photographic reduction overcomes this. 5. See Charts on Typing for Offset and Press Specifications. [Continued on page 363]

Duplication methods, continued:

Style and model	Typical method of operation	Relative quality in performance	Production hints
Automatic typing **Speed:** 110-125 words per minute **Sheet range:** Any letter head sheet **Maximum number of copies:** No limit. **Auto-typist:** American Automatic Typewriter Company, Chicago **Dual Selector:** American Automatic Typewriter Company, Chicago. **Flexowriter:** Justowriter Corp., Rochester, N. Y. **Hooven:** Hooven Business Machine Corporation, Hamilton, Ohio. **Robotyper:** Robotyper Corporation, Detroit, Mich.	1. Letter text is typed, perforating master roll or tape on piano roll principle. 2. Master roll automatically types letters and stops for fill-ins. 3. Heading, address, and special information inside are typed in by hand, with perfect match being achieved. 4. Push-button selection of paragraphs, letters, or billing items is possible on some models. Paragraphs also can be skipped, and new ones or new sentences added. 5. Perforations on some machines release vacuum and pneumatically actuate each character at even pressure.	Individually typewritten letters can be produced in quantity at low cost. Speed and accuracy are greater because once copy is corrected and placed on machine, no further mistakes are possible. Produces approximately 150 average length letters per eight hour day. One operator can run up to five machines, of some models, simultaneously.	**Printing:** 1. Types of both [illegible] 2. Color can be used. 3. Carbon copies usually are sharper than original, and can be made in quantity as on hand-operated machine.

Style and model	Speed	Maximum size	Typical method of operation	Relative quality, available colors	Production hints
Photocopying and allied techniques					
Blue Print **Blue Line Print** Paragon-Revolute Corp. Rochester, N. Y. C. F. Pease Company, Chicago.	 32' per min. 30' per min.	 54" x any 54" x any	Contact print is made by transmitting light through transparent copy onto sensitized surface of blueprint paper. Reversal process: blueprints from positive originals, blueline prints from negative originals. Prints are developed in potash solution and dried by hand or automatically on continuous yardage stock.	Accurate detail. White on blue; blueline print is reverse. Also produces brownprints (negatives) from which blueline or brownline prints can be made.	Cannot enlarge or reduce. Copy should be on translucent paper.
Black-on-white (Same as Blue Print) Chas. Bruning Co., Chicago	20' per min.	54" x any	Similar to blueprinting. Washing and drying not required. Liquid developer used.	All copies are positives. Black, red, or brown on white.	Cannot enlarge or reduce.
Dexigraph Remington Rand, Inc., New York City.	200-1,800 per hour	14" x 17"	Uses sensitive paper, producing negatives.	Reproduces color work as white on black. White on black or black on white.	Can reduce. Uses special paper.
Ammonia type direct process prints Ozalid Division, General Aniline and Film Corp. Johnson City, N. Y. Paragon-Revolute Corp. Rochester, N. Y. C. F. Pease Company, Chicago.	32' per min.	54" x any	Contact print is made by transmitting light through transparent copy onto sensitized surface of ammonia print paper; developed in aqueous ammonia fumes. Direct process: positive print from positive tracings.	Preferred for small jobs because of simplicity of development, or where positive prints are required directly from positive originals.	Cannot enlarge or reduce. Copy should be on translucent paper.
Semi-wet type direct process prints Charles Bruning Company, Chicago. Paragon-Revolute Corp. Rochester, N. Y. C. F. Pease Company, Chicago.	32' per min.	54" x any	Contact print is made by transmitting light through transparent copy onto sensitized surface of suitable paper; developed by applying thin film of solution to paper after exposure. Direct process: positive print from positive tracings.	Same as above.	Cannot enlarge or reduce. Copy should be on translucent paper.
Lithoprint Lithoprint Company, New York City. Reproduction Print Service, Inc., New York City.	20-30 per min.	60" x any	Uses gelatin-covered plate onto which exposed, undeveloped blueprint is transferred. Prints are made from gelatin.	True-to-scale clean copies from dirty originals. Black on white.	Can be enlarged or reduced. Used principally for reproduction of tracings, maps, architect's drawings. Printed on paper, white cloth, tracing cloth, tracing paper, etc.

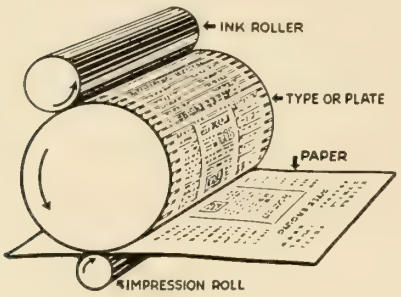
[Continued on page 364]

Duplication methods, continued photocopying, etc.

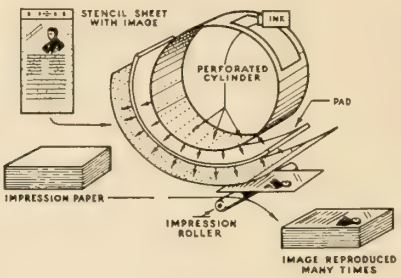
Style and model	Speed	Maximum size	Typical method of operation	Relative quality, available colors	Production hints
Photocopy prints					
1. Lens and prism: Photostat Corporation Rochester, N. Y. Rectograph Division, Haloid Corporation, Rochester, N. Y.	3 per min.	18" x 24"	Print is carried on endless chain through bath, rollers, rinser, and fixing tank. Rectigraph prints emerge face up.	Black, white, sepia, yellow, copper, blue, green, roto-brown.	Can enlarge or reduce. Production speed not as fast as continuous contact copying equipment.
2. Continuous contact: Paragon-Revolute Corp. Rochester, N. Y. C. F. Pease Co., Chicago					Cannot enlarge or reduce. Speed faster than lens and prism equipment.
3. Contact light box: Hunter Electro-copyist, Syracuse, N. Y.					
Portagraph Remington Rand, Inc. New York City.	3 per min.	42" x any	Paper sensitized for contact negatives and positives.	Exact reproduction. Black on white or white on black.	Cannot enlarge or reduce.
Repro prints Reproduction Print Service, New York City.	3 per min.	54" x any	Contact negative is made and image transferred to sensitized tracing cloth.	Exact reproduction. Black on tracing cloth.	Can enlarge or reduce. Corrections can be made on negatives.
Sepia negatives Paragon-Revolute Corp. Rochester, N. Y. C. F. Pease Co., Chicago	3 per min.	54" x any	Sensitized paper is laid next to tracing paper, exposed to arcs or mercury tubes. Copy appears in tracing. Hypo developing, then printing.	Negatives are white on brown.	Cannot enlarge or reduce. Used for map work and for making blueline and brownline prints.
Whiteprint Ozalid Division, General Aniline and Film Corp. Johnson City, N. Y.	20 per min.	54 "x any	Sensitized paper is exposed to light and developed dry by ammonia fumes; no washing or drying.	All copies are positives. Dark red, sepia, blue, or black on white.	Cannot enlarge or reduce. Can be used on wide variety of papers, cloths, or foils.
C. F. Pease Co., Chicago	30 per min.	54" x any			

Operating principles of chief duplicative methods

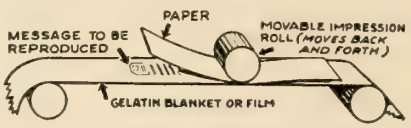
These illustrations demonstrate the operating principles of seven leading duplicative methods:



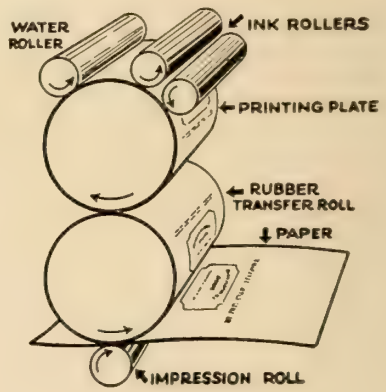
Principle of letterpress duplicating



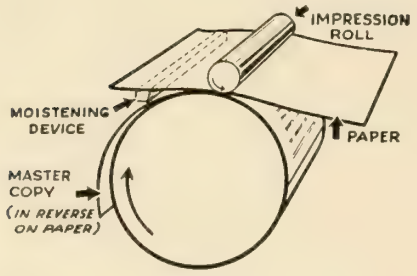
Principle of stencil duplicators



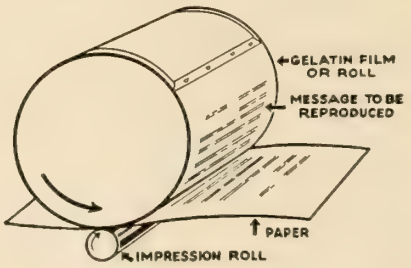
Flat bed gelatin duplicator



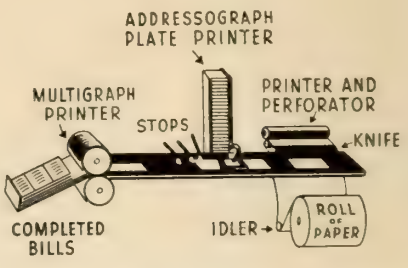
Principle of offset process



Principle of liquid duplicators



Principle of rotary gelatin duplicators



Multigraph Printer combined with Addressograph

Illustrations © Hammermill Paper Co. Stencil principle, A. B. Dick Company

REMINGTON RAND

catalog binders . . . that sell . . .

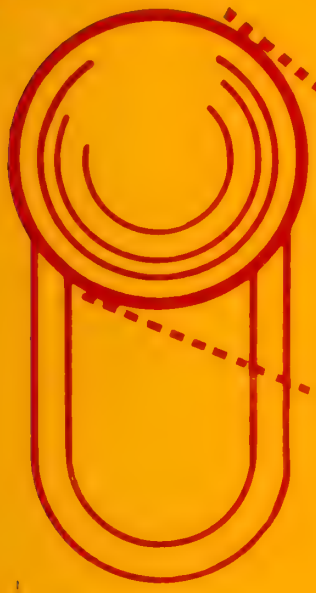
TRI-LOCK

the newest binder for advertising and sales presentations—

There was a time, when a sales executive wanted a catalog binder, he chose between secure page compression and flat reference.

The TRI-LOCK is the *only* loose-leaf binder that has wholly solved the problem of positive compression *plus flat-as-a-desk-top* reference convenience right to the inside gutter.

TRI-LOCK's exclusive button-control locking mechanism may be set in any of three positions: (1) sheet compression, (2) flat reference, (3) convenient sheet changes.



POSITION 1—Compression. No decision *between* compression-security and flat reference convenience. You have both!

POSITION 2—Flat-reference. Telescoping posts expand automatically providing easy reference, to the extreme inner edge of the page.

POSITION 3—Easy Sheet Changes. The top cover can be lifted and hinged back out of the way. No fumbling, no lost alignment. Swift, secure sheet changes.



for dynamic sales presentations

LEV-L-LOK

STAYS WIDE OPEN WITHOUT HOLDING...



Here is a compact light-weight loose-leaf binder, with self-expanding telescoping posts which make it ideal as a binder for salesmen. Attractive, provided with embossed covers, LEV-L-LOK's economy appeals to sales executives, its utility to salesmen.

Don't overcrowd Ring Binders for your sales presentation when LEV-L-LOK's flat reference gives you capacity ranging from 1½" minimum to 2¼" maximum. You get 50% expansion plus swift secure sheet change. A variety of binding materials is available too!

for expanding sales catalogs

CATALOGER



LEV-L-LOK & CATALOGER

OPEN FLAT!

NOT THIS



BUT THIS



✓ STAYS OPEN WITHOUT HOLDING

✓ TAKES RING BINDER SHEETS



Not unlike the Lev-L-Lok shown above, the newly developed Cataloger provides even greater page capacity. You can start with 2 inches of bound material and automatically expand to a 3½ inch maximum.

What's more, the Cataloger pages lay flat and *STAY FLAT* when opened. Its ingenious locking mechanism reduces time needed to change pages—and transfer of pages can be made with no loss of sheet alignment.

Like the Lev-L-Lok, the Cataloger is designed for 11 x 8½ sheet size, and the covers may be embossed with any message you desire.

PRONG BINDERS

PARA-PRONG and VARI-PRONG

Here are two brand new Catalog-presentation Binders. Para-Prong is designed for standard Ring Binder punching. Vari-Prong accommodates, on its double prongs, the Kalamazoo or Tengwell punching systems.

Each binder's mechanism provides for wide-open reference and secure, effortless exchange of pages. What's more, these *Prong* Binders hold your catalog sheets securely however crowded the binder, even when open for flat-reference or sheet change. Embossed covers are available.



POST BINDERS

FOR HEAVY DUTY CATALOGS

These binders have strength and durability unmatched by any other binding. Even when subjected to the hardest kind of use, loaded to capacity, they retain their secure efficiency of operation. The distinctive quality appearance of the "HCS" Binder illustrated is matched only by its incredible 10" capacity! For convenience in carrying these binders, they can be supplied with carrying handles—as well as in various attractive grades of colored coverings.

If you need exceptional capacity for heavy usage, this is your catalog binder.



RING BINDERS

ALL SIZES, CAPACITIES, QUALITIES

One of the most versatile of all binding types, Ring Binders are sensibly priced—an economical solution to your catalog binding needs. Available in a variety of sizes, stamped with your own design on the covering, they provide flat-opening ONE-HAND reference to all material within.

And when you order from Remington Rand you order directly from a responsible *factory source.* Your whole job is done in one place by one manufacturer, just as you ordered it.



PROPOSAL COVERS

FOR PRESTIGE PRESENTATIONS and REPORTS

Remington Rand offers you a complete supply of all types of presentation covers. These range from book units of the type illustrated (with Kardex pockets for visual presentations), to simple loose-leaf proposal covers designed to accommodate the written submissions of salesmen. A wide variety of sizes, cover materials and colors are available—and embossed covers of your own design can be furnished.





REMINGTON RAND'S

SALEMASTER

The GUIDED sales presentation

Salemaster provides a step-by-step visual sales-story just as the sales manager originally planned it. Nothing can be forgotten, no selling point missed, and every presentation follows the same time-tested sequence that you know creates a sale.

Your illustrated sales interview is printed on Kardex cards which are, in turn, housed in famous Kardex pockets. The celluloid tips of the pockets protect the edges of sheets and provide a visible index of all the material. The loose-leaf binding device at the right may be used to hold testimonial letters, catalogs, special offers, anything that will help to close a sale. The whole of your sales interview, from approach to "close," is complete in a single dignified, potent presentation.

Remember, not only can your salesmen sell *better* but they can sell *faster* and see more customers when they use Salemaster. And *you*, as Sales Manager, control their interviews just as if you were present!



ONLY REMINGTON RAND

can furnish every

LOOSE LEAF NEED!

When you order from Remington Rand you deal directly with the manufacturer. You are assured of an unprejudiced recommendation by experienced men who have every and all types of Loose-Leaf equipment to offer. Thus, you select the exact Binder your Loose-Leaf needs require.

So drop a line today, or phone your nearest Remington Rand branch office, for obligation-free quotations or literature for any type of Loose-Leaf requirement.

SYSTEMS DIVISION

Remington Rand

315 FOURTH AVENUE, NEW YORK 10, N. Y.

CANADIAN HEAD OFFICE—TORONTO 1, ONTARIO

LL-141 Printed in U.S.A.

Loose leaf binding styles

Capacities, uses, and production characteristics of twenty-four principal binding styles including ring, prong, post, and display binders

Edward H. Zerbe

Generally speaking, there are dozens of looseleaf binders in various styles available, but the majority can be classified as ring binders, prong binders, or post binders. Each of these has its own basic points of superiority, and in selecting a binder for any specific requirement a number of factors should be carefully considered.

The major factor is the bulk or thickness and the sheet size of material to be bound; next, the frequency of sheet changes and the kind and weight of paper stock used, the distribution and possible handling the binder must withstand, and the price limitation, if any.

Should the sheets bulk $^1/_8$ to $1^1/_4$ inches, a ring type binder has the advantage of flat opening: quick, easy changing of sheets, and complete visibility of the printed pages. A wide range of sheet sizes, cover materials, and qualities are available, with a price variation to fit almost every possible budget limitation.

However, ring binders cannot be filled to the maximum without the danger of sheets tearing, and there is a capacity loss of about $^1/_8$ inch on small ring sizes, increasing to possibly $^1/_2$ inch in 2-inch rings. Ring binders are made up to 2-inch size, but are less practical than the sturdier prong and post binders for books having 1 inch or more of sheets.

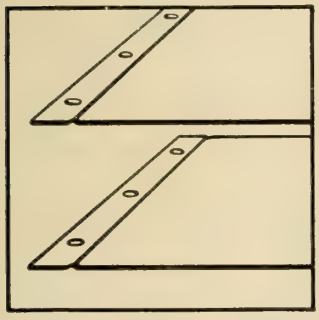
Prong binder

The prong binder merits primary consideration for capacities of 1, $1^1/_2$, 2 and 3 inches. It combines the major advantages of both ring and post binders; the entire rated capacity can be filled with sheets; sheets lie flat, and are held firmly in alignment; and changes can be made easily and quickly anywhere in the binder without removing the balance of the contents. The construction is sturdy, compact, built for hard use.

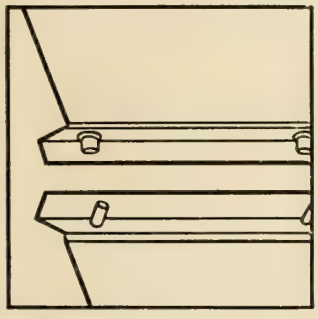
Post style binders, on the other hand, are made in a wide range of capacities —tongue styles for holding a few sheets, up to the heavy duty angle backs for 5 and 6 inches of sheets, and most post binders allow for capacity expansion. They provide maximum sheet protection, and can be made in various qualities and materials in a range of prices for almost every conceivable requirement. The construction does not allow flat opening, and the changing of sheets is a slower, more complicated operation than in either ring or prong binders.

The accompanying illustrations and descriptions cover some of the most popular looseleaf binders. The first nine styles feature devices that securely clamp the sheets together at the binding edge. The next five styles are binders that allow the sheets to ride freely at the binding edge. These are followed by three miscellaneous, special styles, and seven display type binders used as visual selling aids and to help present a prearranged consecutive story in pictures or words. Of course, special binders can be made up to meet special requirements.

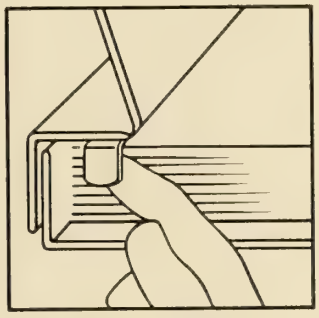
Principal looseleaf binding styles illustrated and described in detail



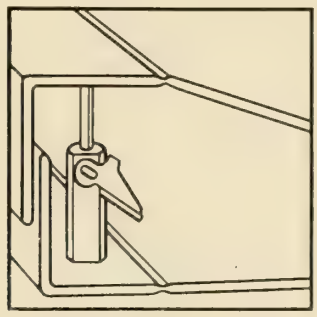
Two-piece simplex: Inexpensive binder consisting of two pieces of cover material (cover paper, Lexide, leather-cloth or leather) in cut-flush or case-bound construction, hinged and punched so sheets can be inserted between covers and held with power fasteners, Chicago screw posts, or automatic locking mechanism. Variable capacity, for a few sheets to several inches. Used where flat opening is not essential, or where price is considered a determining factor.



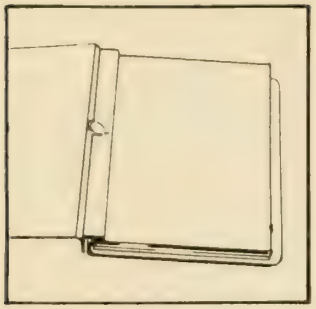
Angle back post: Made with two L-shaped metal angles at back edge; stiff or flexible board sides, bound in canvas, cloth, or artificial or genuine leather. Two or more posts, anchored to bottom metal angle, with threaded screw posts, which hold the sheets and lock the binder, inserted through top cover. A heavy duty binder, generally used for large capacity requirements. Gives maximum protection to sheets, which cannot lie absolutely flat in this binding.



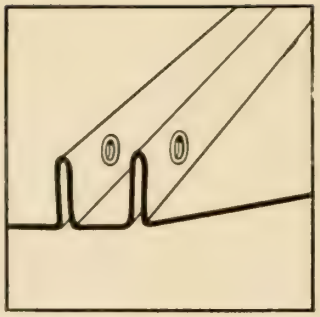
Quick action angle back: Constructed about like angle back and angle back lever lock, but with slide locking bar built on inside of top cover. Slight pull on lock bar unlocks binder, which makes possible quick removal of top cover. Smallest capacity for this style of binding is ½" minimum.



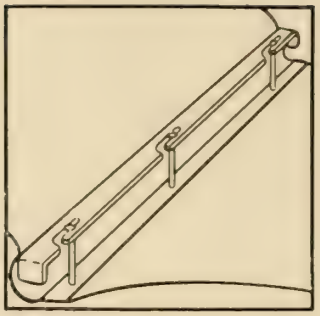
Angle back lever lock: Construction similar to angle back but with quick-action locking posts set at extremities of angles, permitting easier and speedier removal of top cover for changing of sheets as well as ability to partially separate and lock covers, thus releasing compression on sheets and permitting them to lie open in semi-flat position for greater visibility. This classification includes angle backs with end locks, roller locks, or rachet locks.



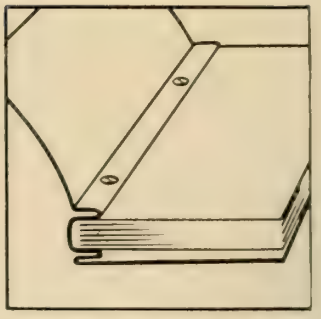
Lift ring angle back: A comparatively new type of angle back binder, similar to those to the left but having a single locking post inside top cover, with ring pull at top for locking and unlocking. The smallest capacity is 1½" minimum.



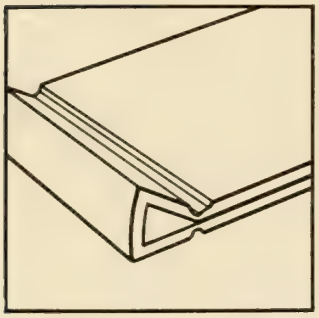
Tongue, one piece, six score: This is one piece of cover stock or Lexide material with 5, 6, or 7 scores and folded to form tongues. The fastening devices and materials are the same as for Simplex. Tongues or stubs may be stitched or eyeletted together if desired.



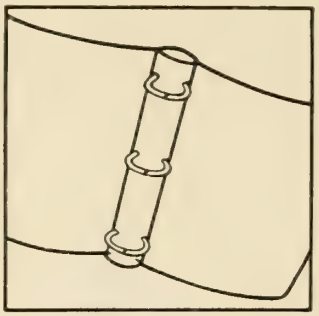
Tongue, quick action lock: Construction is same as tongue binder above, except that metal slide bar is attached to or within one of tongues. Heads of the posts lock into this bar, which secures sheets. This is faster for making changes than ordinary screw posts or other methods. Made in minimum capacities of ½" up, with either expansion or fixed capacity posts used.



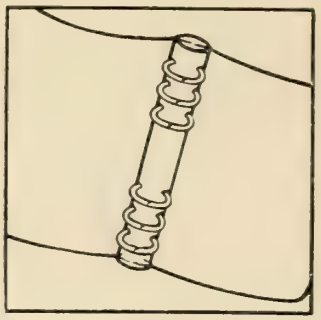
Tongue, case bound: Consists of a continuous cover having two tongues that are either sewed or glued into the book cover. These tongues in turn are punched and equipped with the fastening devices as described above. Case-bound tongue binders are usually covered in artificial leather, book cloth, or genuine leather. While they are made in capacities up to several inches, they are more practical only up to a capacity of 1".



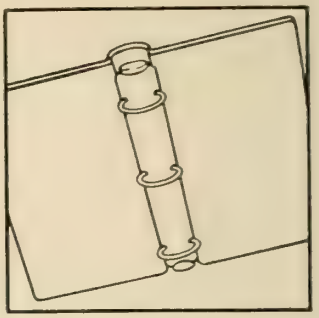
Spring back sheet holders: Constructed with a spring style round back that can be sprung apart for inserting sheets between the open jaws, which when released clamp the sheets without the necessity of punching. This style is much used for holding bulletins, magazines, and the like.



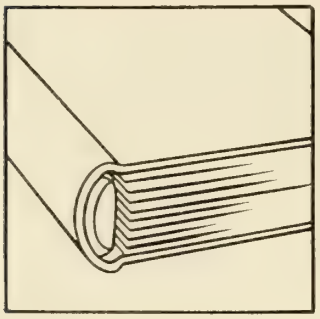
Cut flush ring ½" to 1¼": About the least expensive style of looseleaf binder having two or more rings, with or without a mechanism for springing open the rings. Metal assembly is riveted or fastened with a backplate to a scored cover of material such as cover stock, one-piece artificial or genuine leather, or Lexide cover.



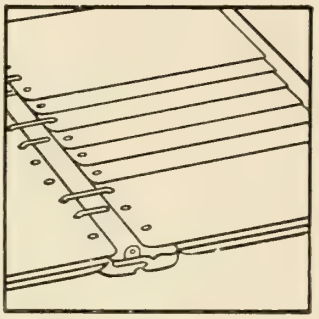
Memo ring: The same as the cut flush or case bound except that the capacities are smaller, running from ¼" to 1", and the rings are usually grouped in sets of three at either end of the metal housing.



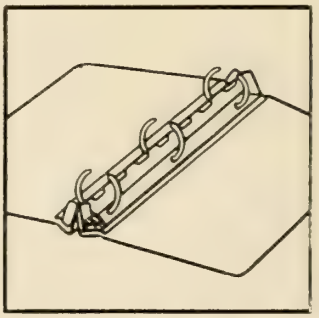
Case bound ring ½ to 1¼": The same general style as in the cut flush ring binder except that the cover material, being of paper, cloth, artificial leather, or genuine leather, is bound over stiff or flexible boards. Backplate that holds metal mechanism is bound into cover, then lined with additional piece of material on the inside.



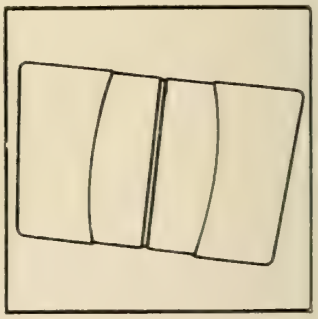
Large ring: Binders in sizes of 1½" and 2" are usually made with heavy case bound covers to withstand considerable handling. In the 1½" size, both light and heavy duty metals are made, while the 2" size is limited to heavy duty.



Visible record shift lock: This binder looks something like a ring metal except that there is a leverage action that jogs the punched sheets from one set of rings to the next set above, or vice versa. These are used for holding cards with records or addresses in sequence, each card acting as its own index, as illustrated above.



Prong—1", 1½", 2", and 3": This is the most versatile, as well as the most durable, type of looseleaf binder, having a multiplicity of half-round arcs or prongs anchored into hinged metal angles of steel. The prong binders can be obtained in capacities to hold an exact number of sheets, and are equipped with a second stage opening used for flat writing, etc.



Pocket cover: Consists of a book cover having a pocket in either inside cover so that catalog or other books will be protected by inserting the end sheets of a catalog into the pockets. This works something like a book jacket, but is in a little more durable form. It is also used for salesmen's pads in which the stub of the pad is inserted into a salesman's pocket



Let Burkhardt submit ideas on your Sales Binder problems . . .

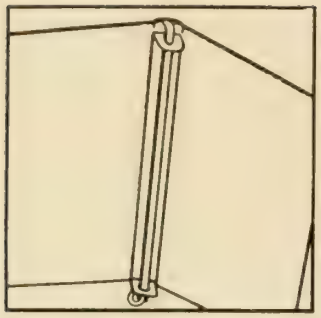
Every year more and more leading industrial firms depend on Burkhardt for their custom built, up-to-the-minute, sales binders and equipment.

The reason? Burkhardt offers a complete binding service—from design to finished product—for all sales, advertising and service department needs.

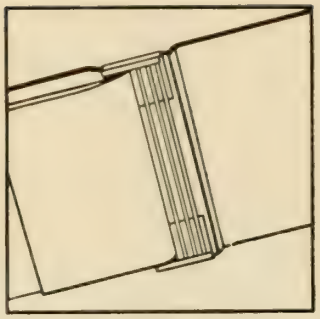
LOOSE LEAF RING BINDERS • PRONG BINDERS • POST BINDERS
BOOK AND CATALOG COVERS • PRINTED • FOIL STAMPED • EMBOSSED
EASEL DISPLAYS • CELLULOID INDEXES • EMBOSSED SIGNS
ZIP-A-KIT PORTFOLIOS

Write, wire or phone for samples and complete information

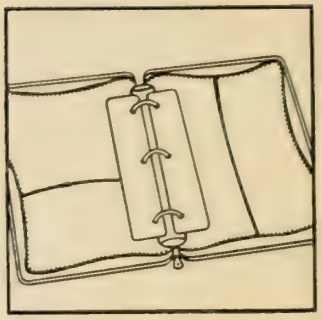
THE BURKHARDT COMPANY
LARNED AT SECOND BOULEVARD, DETROIT
BINDERS TO AMERICAN BUSINESS



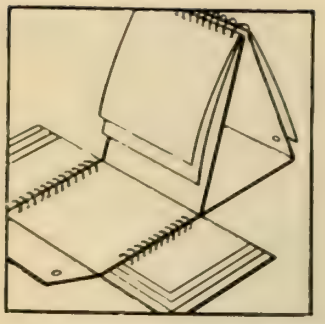
Magazine, one wire: This type has a metal plate in the back turned up at either end, with a heavy wire hinged at one end and inserted into the saddle of a magazine, the wire being locked at the other end of the binder as above.



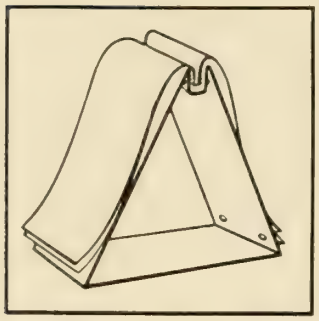
Magazine, multiple wires: The binder has metal plates at the top and bottom of the binding edge with perforations for receiving a number of wires so that several thin magazines could be inserted into the one binder. There are a number of variations of this style.



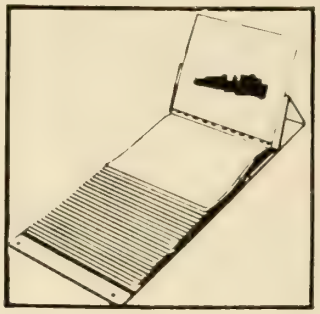
Zip-a-kit: This usually is a genuine leather cover having a slide fastener or zipper around three sides, the inside consisting of various pocket arrangements for holding literature samples or display easels, while in the center section may be attached ring binder metals or prong metals for holding sheets or complete catalogs. Zip-a-kit is made in thin capacity such as an underarm kit, or in large size having handles for carrying, etc.



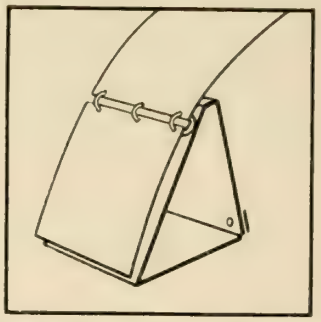
Sales accelerator display unit: This may consist of a combination of single or double vision display binders, on the front edge of which may be hinged one or two data books or sample books that deal with the illustrations on the easel. For instance, the main easel might include pictures of a new automobile while the small books on the front section may contain color chips on one side and upholstery samples on the other.



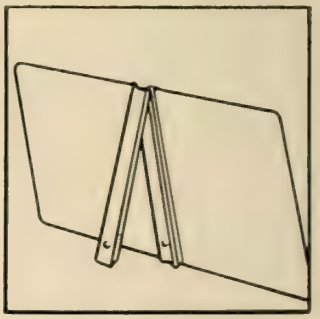
Easel, single vision display: Stands up in triangular form. The visible sheets lie on the top of the triangle while the used sheets flop over the top and lie on the back triangle. This binder folds up neatly and compactly for carrying. It may also have a binding mechanism such as tongues, rings, etc.



Visi-kit photo display: This has a magazine metal with multiple wires, on each of which are attached transparent flexible envelopes for holding photographs, blueprints, drawings, etc. Fifty or more photographs can be displayed. The back part of the binder erects to form an easel and the envelopes are arranged so that the front edge may be indexed for quick location of the given subject. It folds for carrying.



Easel, double vision display: General construction is the same as that of the single vision except that a prop supports the sheets one above the other, so that descriptive literature may be displayed on the top sheet while the lower sheet shows photographs, blueprints, etc.



Tri-purpose display: May be held as an ordinary book with a prop that folds outward from the backbone, forming an easel for standing or a handle for holding when demonstrating for an audience. Back support snaps shut when display is in closed position.

Editor's note: Advertising and sales presentations are among the many types of work that makes use of looseleaf bindings. Very often such presentations are made up in limited quantities, such as a few hundred for a sales staff. In some cases, just one copy may be required, as for a one-time round-table discussion or the presentation of a plan of an advertising campaign by an agency to a client.

To select the most suitable style of binder for such a purpose, experienced manufacturers of loose leaf binders should be consulted. They can usually build special kinds of binders to meet a wide variety of needs or can point out immediately the best standard style to use for a given purpose. They can also offer invaluable suggestions regarding production procedure, decorating, and handling of the job in general so as to get the most effective results with a minimum of time and expense.

There are also a number of art studios that specialize in the preparation of such small-run jobs and are equipped to rush them through, as is often necessary, as well as to hand-letter titles, do a neat job of assembling and mounting of demonstration material, draw background illustrations, rule and letter graphs and charts, and decorate title pages and covers. In many instances, they are equipped to offer a small hand composition service. Often equipped with a proof press, they can set up titles and captions in type and supply the required number of good proofs. Although this sort of job may come the production man's way only a few times a year, it is of such a non-standard and such a rush nature as to throw the best of work schedules into confusion. For this reason it is recommended that production men work with a bindery or art studio that is accustomed to this sort of work. and is thus prepared to relieve him of the many and varied details involved.



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Pamphlet binding

Five basic steps in the production line of a bindery; how folding machines operate; common binding styles illustrated; efficient procedures suggested

Joseph M. Siegel

The finishing of booklets, circulars, and magazines has a stake in the final product out of all proportion to the cost involved. This part of the work generally contributes only about ten per cent of the total outlay, but it can nullify all the effort and expense that preceded it.

Proper pamphlet binding contributes nothing because it is taken for granted. If the finishing is right, that is merely as it should be. But poor planning or faulty workmanship outweighs the work of the best designers and copy men.

There are five basic steps in the production line of a bindery—preparatory cutting, folding, stitching or sewing, trimming, and packing.

Cutting

Cutting of printed sheets in advance of folding is a vitally important operation. First of all, cutting should be eliminated where possible. It involves expense and causes a variation right from the start. A draw develops whenever a cutting knife goes through a pile of paper, the amount varying with different types and qualities of stock. This draw replaces the nearly absolute accuracy of the press guide and gripper that a folding machine can duplicate.

Naturally, in the case of circulars that must cut to bleed, sheet cutting must be done. In this instance, only the ability of the machine operator can give the desired result. However, when a booklet is being prepared, it can be laid out in such a way that the sheet will run on a folding machine exactly as printed, regardless of the number of pages. This will occasionally require a slightly larger sheet, but the improvement in appearance, together with the elimination of one production step, outweighs the increased cost of the paper itself.

Folding

Folding has the most important single effect on final appearance. There are but two types of folding machines that are in use—the knife and the roller.

The knife-folder is used exclusively for booklet production and from an efficiency angle is most economical for large sheets and for especially light papers. There is a considerable range in sizes and impositions available. The former goes from a minimum of 11x17 inches to a maximum of 50x74, not all on the same machine, of course.

Knife-folding

The knife-folding machines will handle impositions from 8 to 64 pages in a single operation, with the exception of such odd units as 20, 28, 36, 40, 52, 56, or 60 pages. Impositions of more than 32 pages require machines somewhat more specialized and are not to be found in the average pamphlet bindery.

A 32-page imposition is made with four folds and is about the maximum practical thickness of a signature where the paper exceeds 60 lb. basis. The 48- or 64-page impositions are practicable on all papers up to 60 lbs. with the exception of offset stocks. In the latter case, the greater bulk and toughness operate against fivefold impositions even in the lighter weights.

Roller-folding

The roller-folding machines are at a disadvantage in comparison with knife-folders in only three points.

First, the maximum size is 39x64 inches on parallel folds and 39x52 on right-angle folds. Against this is the minimum size on standard machines of 3x4 and a minimum fold of one inch.

Second, in folding large sheets, the knife will show a greater output. Offsetting this is the fact that in the more common sizes the roller machine gives considerably increased production.

Third, on extremely light papers, particularly where three or more folds are to be made, the disadvantage of the roller machine presents no compensating advantage. However, the latter has many general points in its favor. It is far more flexible, being able to handle circulars and broadsides in a great variety of the folding combinations not to be found at all on knife machines.

There are many possible uses to which this flexibility can be put. However, the writer has found it expedient, as a general rule, to try to adapt the machine to an idea that was presented. In the exceptional case of an impractical fold, it has invariably been possible to offer an alternative so close to the original as to achieve the same result.

In the production of booklets, the roller machine offers an economy since, within its sheet range, it will take the impositions that are impossible on the knife machine. Here also exists the same factor of thickness. Four folds are not very satisfactory on 80 or 100 lb. papers, and five or more folds practically impossible on papers exceeding 60 lbs.

The problem of thickness is far more acute in the production of broadsides than booklets, because there is no opportunity to eliminate, by perforating, any air pockets that may be formed.

Grain of paper

In all folding operations, the direction of the grain of the paper is important, the importance rising with the increase in bulk of paper, number of folds, and finished size. As a general rule, the grain should run with the backbone of a book or with the last fold of a broadside. With 80 or 100 lb. papers this rule is absolute.

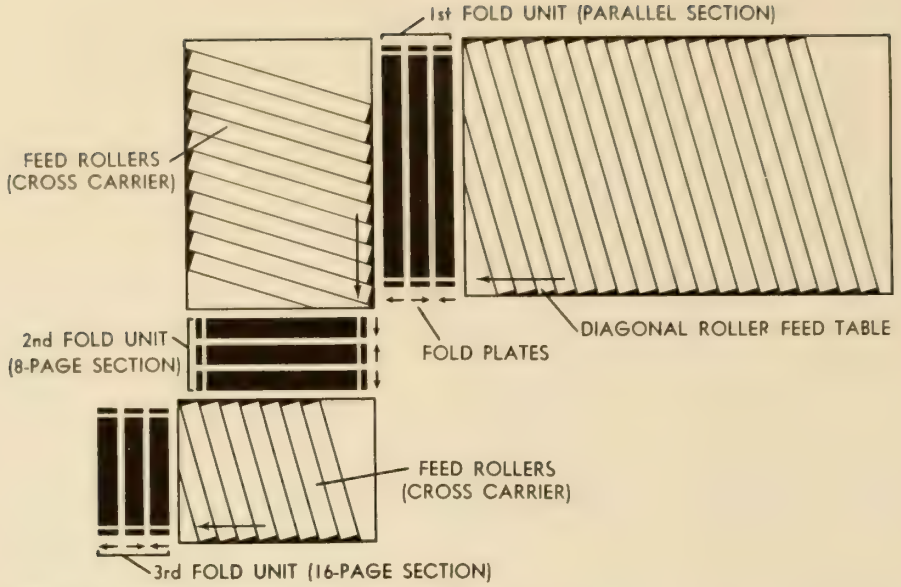
Folding against the grain causes a variation in the fold which becomes progressively more difficult to control with each fold. It will also cause a percentage of spoilage far greater than with the proper grain. In booklets of smaller sizes, the wrong direction of the grain will cause the book to spring open when finished, even though the paper may be light enough to fold properly.

Turning now to a consideration of economy in producing printed matter, it is always wise to consult with the bindery before the planning stage of every printed job. Very often this will result in considerable savings of money and time.

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Cleveland folder: A folding machine is a series of folding sections of one or more fold plates each. Fold plate is a metal device which guides and registers sheet as it passes through fold rollers. Illustrated above is a machine having three sections, each having three fold plates. Not all the fold plates are used all the time. Labels indicate the three sections: the parallel, eight-page, and sixteen-page. Feed rollers drive sheet into fold plate. As sheet strikes gauge, it buckles and passes through folding rollers. Sheet is folded one or more folds, then passes on to next folding section. Folding processes are continued until desired number and kind of folds are achieved. Simplest machine has two parallel folds, while most elaborate has 16 fold plates. Sheets may be folded in right angles, parallels, or in combinations of right angles and parallels.

As has already been pointed out, folding machines are extremely flexible. Layouts can frequently be made that offer a considerable saving in the bindery operation, even to the point of offsetting what seems to be an unnecessary additional cost in the pressroom.

The longer the press run the greater the possibility for effecting this saving. This factor enters through the use of multiple printing plates and sheetwise forms instead of work-and-turn. But the printer can thereby take advantage of the larger sheet sizes available in folding machines and can also expect faster production when the job is ready for the bindery. An excellent example of this comes to mind where a printer was shown that he would save money by making three sets of plates for a book having a total of 256 pages.

Binding is the next operation in booklet production. This may be saddle-wire stitching, side-wire stitching, or sewing.

Saddle-wire stitching is the process in most common use because it is the least expensive, fastest, and most inconspicuous. This operation is performed on an automatic machine by dropping the folded signature on a chain which carries it under the stitcher heads where a trip causes the insertion of the staples.

Since the stitching machine is equipped with several stations, it will also assemble a booklet consisting of two or more signatures. Stitching machines are to be had that will handle a signature 39 inches in length comprising as many as six booklets, an additional saving by using multiple plates, as discussed in the section on folding.

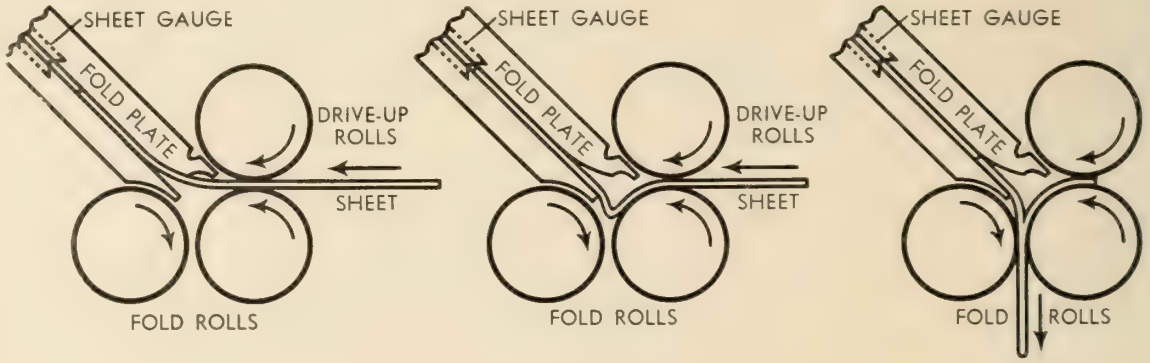
There are two limitations to saddle-wire stitching. First, two staples cannot be inserted in one operation in a space less than 3½ inches wide. Booklets under that size must either be stitched with one wire or put through the machine twice, one wire being put in each time. With the increased use of package inserts, this point is frequently overlooked and specifications are drawn up calling for two stitches—an unnecessary expense, since small booklets are as securely bound with one wire as with two.

The second limitation is the matter of thickness. One-quarter inch of paper is just about the maximum practical thickness for saddle-wire stitching, since beyond this point there is a serious tendency for the wire to pull through the centerspread of the book even after a small amount of handling. Thick saddle-wire stitched books also are quite difficult to trim.

However, this type of binding does permit the book to open almost completely flat even when such a book is comparatively thick.

Side-wire stitching is the next most economical form of binding. It is best used when the bulk is too great for saddle-wire stitching. By this method the book is assembled, stitched flat, and the cover glued on afterward to the square backbone. It is costlier where the bulk is not great, but it gives a thin book the appearance of added thickness.

The entire operation is accomplished on a single machine, which is not well adapted to short runs because of the amount of preparatory time required. The drawback of side-wire stitching comes from the fact that the book cannot be completely opened since the staples must be inserted at least ⅛ inch from the backbone of the volume.



Cleveland folder: This feeds and registers a sheet by means of diagonal rollers. The sheet passes through knurled drive-up rollers into the fold plate, is stopped by adjustable sheet gauge, then buckles and passes through the fold rolls, completing fold. Folders are untimed; sheets come in steady stream.

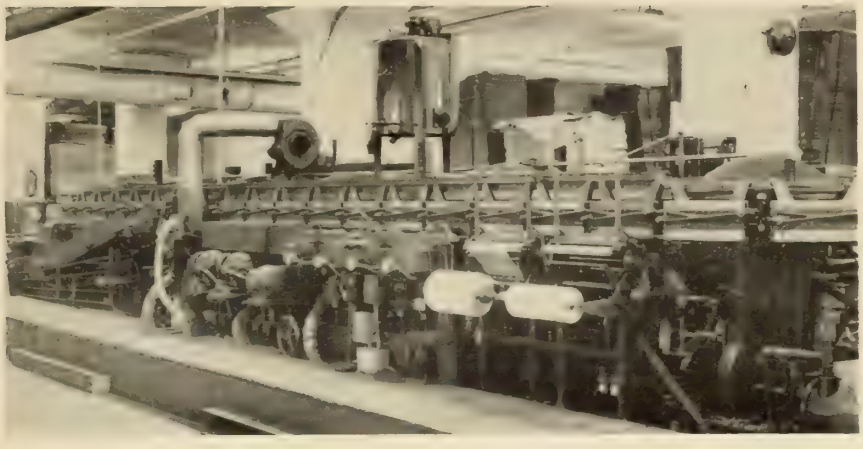
REPORT on American Book Publishers Council Meeting

THIS IS THE PROBLEM

"RESOLVED: by the members of the American Book Publishers Council that the book manufacturing industry be urgently requested to make an immediate study of technological improvements in all processes of manufacturing, particularly binding, so that lower costs may be insured to book publishers and also that all costs be reviewed immediately with a view to reductions line with the general economic lower prices, and that in arriv reductions, due weight be ings in overhead manufact

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As an improvement to the appearance of a book bound by this method, it is possible to "hinge" the cover. Hinging consists of applying a strip of glue ¼ to ⅜ inch wide down the first and last page of the book and gluing the cover to this part as well as to the backbone. The effect is to conceal the wires. This step also provides more gluing surface and fastens the cover more securely to the book, an important factor where the backbone is narrow.

Thread sewing is the next form of binding in common use. This may be done in the saddle instead of wire staples for greater permanence but is quite expensive for the result achieved, since the sewing is a slow operation and the binding requires a cloth strip to be applied on outside of cover to conceal the thread.

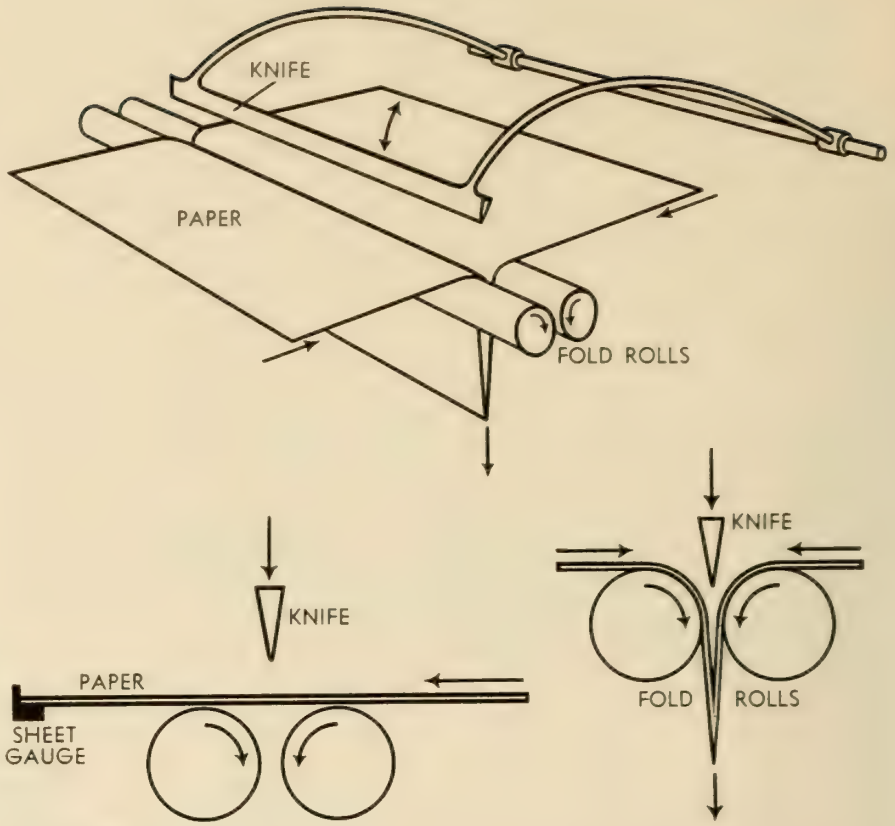
The more common type of sewed pamphlet is used for heavier books and has a glued cover like the side-wire book. In this method of binding, the signatures are gathered and fed to the sewing machine.

While a book bound this way is considerably more costly than if wire stitched, it has marked advantages.

First, it presents a much neater appearance. Except for the cover it is much like a case-bound book.

Second, binding is much less conspicuous. Since it is purely functional, the less attention it attracts, the better.

Third, a sewed book opens almost completely flat, thereby overcoming the most serious objection to side-wire stitching. From these advantages it can be seen that the sewed pamphlet is particularly well adapted for a medium run or a high-grade job, where expense is no object, within limits of normal reason.



Dexter folders: The Dexter principle uses a knife for folding. Sheets travel on tape conveyor to registering guides, come to rest over fold rollers. Descending knife blade creases paper and drives it between counter-revolving rollers. Dexter type of folder is a timed machine, with one sheet folded at each cycle of operation. In both the Cleveland and the Dexter machines the sheets are conveyed to the successive folding units for making any desired number of folds.

Trimming

Trimming is the final step in the production of a pamphlet. The operation in itself is well standardized and is essentially merely paper cutting. There are, however, some problems that always arise and that should be considered from the beginning.

The most urgent of all these is the irremediable breaking of corners at the binding side on saddle-wire books. This happens with every saddle-bound book, and is due to the gaps that exist in every pile because of the curve at the back. Since the arc increases with the thickness of the book, the amount of break increases accordingly.

There is only one way to eliminate this trouble, although it sometimes can be minimized by changing the size of the pile and having the knife cut into the backbone instead of away from it. When the break is particularly serious, the only remedy is to trim the books open, at the head and foot, then close them and make the front trim. This procedure is slow and costly and may not cut precisely square, but it will eliminate break.

Packing

Packing is the last operation performed in a bindery and receives much less attention than it deserves. First impressions are vitally important; very few jobs, however carefully they may have been planned and executed, can overcome being badly packed.

All printed matter should be banded in uniform lifts of convenient size and packaged in corrugated containers. A carton weighing 50 to 65 pounds made of 200 text corrugated board is the most satisfactory unit for the average job. It is neither too big nor too heavy for convenient handling, and presents some decided advantages over any other method. There is less bother for the user of the job than either bundles or cases. The labor cost of packing is lower, and the transportation charges less than for wooden cases.

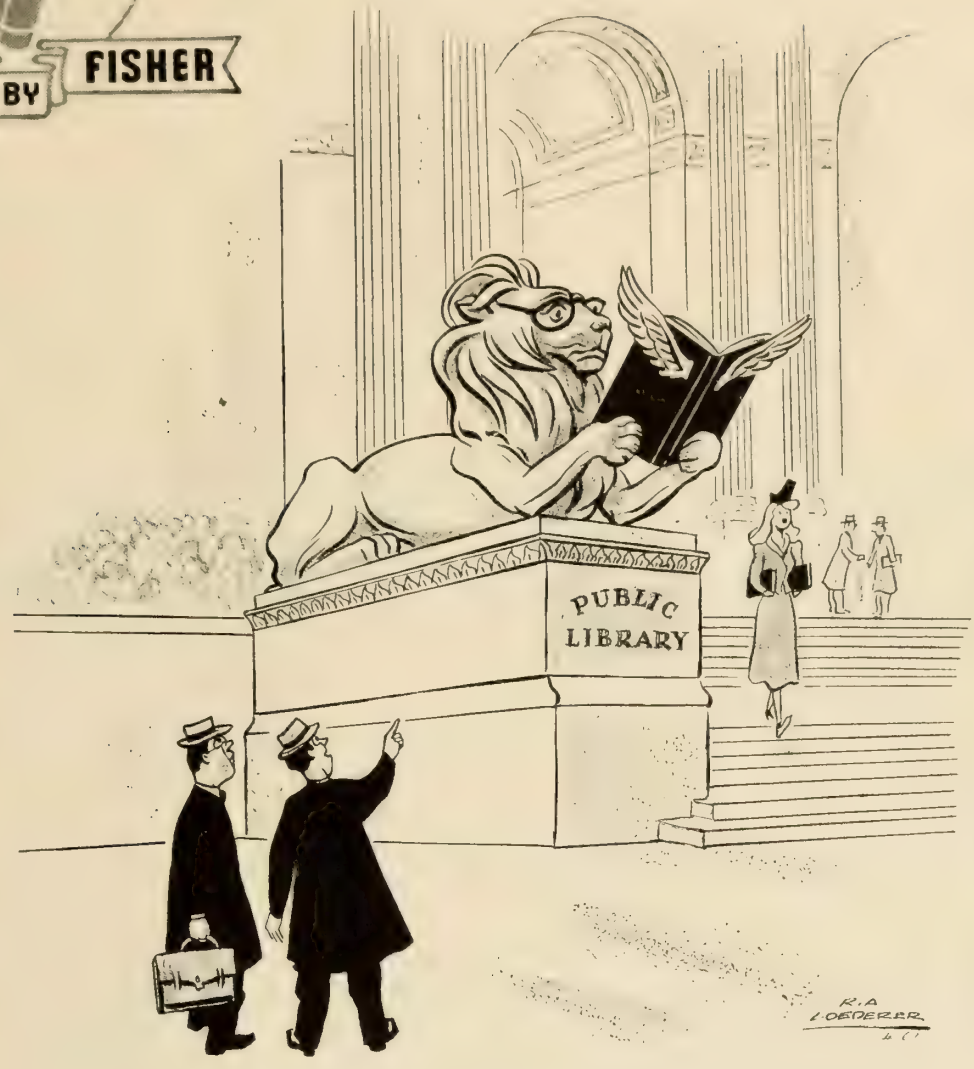
A review of the machinery the binder uses and what he can do with it does not close consideration of the binder's relationship to a printing job.

He should furnish an imposition for each job, clearly indicating guide and gripper for the stonehand. He should consider his choice of imposition to give the best results with the least possible spoilage. He should take entire responsibility for a job from the time it leaves the pressroom until it is delivered.

He should also furnish his customer with a complete itemized statement of cash outlay, shipments made, and dates, accompanied by all receipts and other documents related to the job.

In brief, it is the binder's function to make himself an integral part of the entire line that produces a printed job. As the last link in the chain, it is of vital importance and can "make or break" all the expense and effort put into the job.

BINDING BY FISHER



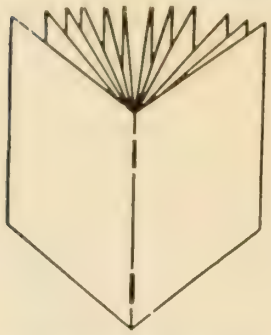
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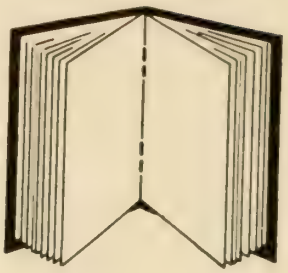
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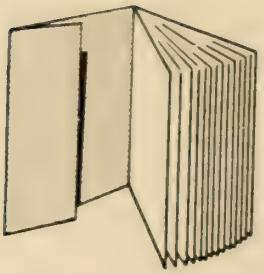
Pamphlet binding, continued: principal booklet styles



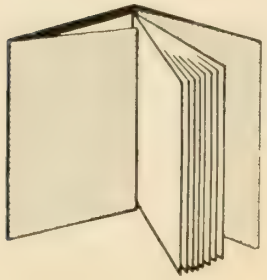
Saddle-stitched cover, top, bottom, edges, trimmed flush.



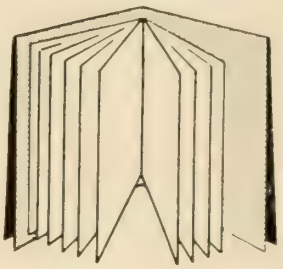
Saddle-stitched cover, top, bottom, and edges extended.



Saddle-stitched binding with a short tuck-in flap on cover.



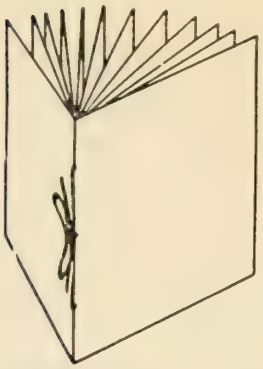
Saddle-stitched cover folded deep on first, last leaves.



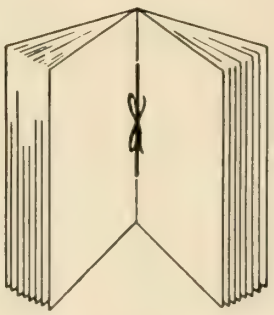
Saddle-stitched pamphlet binding with French-fold cover.



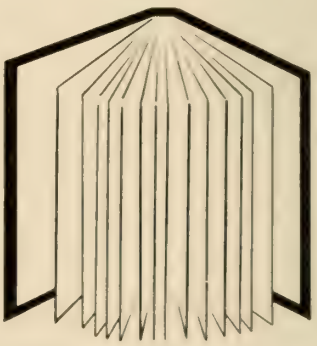
Saddle-stitched pamphlet binding with a six-page cover.



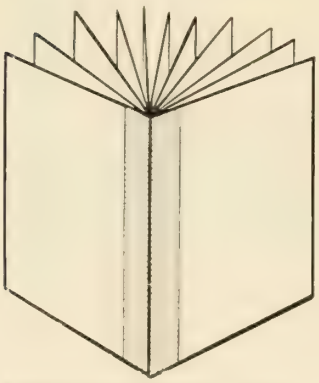
Saddle-thread or -cord pamphlet with bow on the outside.



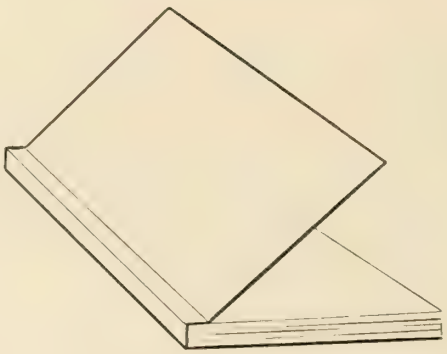
Saddle-thread or -cord pamphlet with bow on the inside.



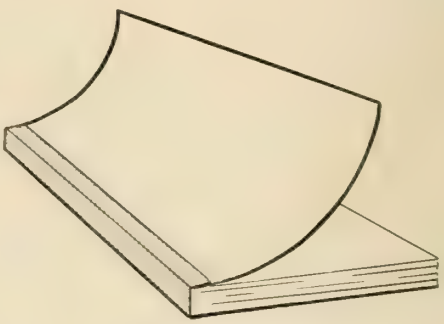
Smyth-sewed, opens flat Text can be pasted to cover.



Saddle-wire stitched. Cloth strip down back, cut flush.



Side-wire stitched, glued on back, cover hinged, cut flush.



Side-wire stitched through cover, cloth strip reinforced.

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Mechanical bindings

Twenty-five flat-opening binding styles offer a wide variety of features; maximum and minimum binding edge and maximum book thickness are listed for each

Compiled by the editors

Bindings illustrated and described in the chart on this and the following pages are mostly mechanical, flat-opening, bindings, with or without loose-leaf features. The most recently introduced styles include Interlock, Nu-plast, Spiralock, and some new Tauber styles including Tauber Multi-ring, Tauber S-ring, and Tauber Twist.

As their name implies, all the bindings open and lie flat with excellent alignment of pages. They are very suitable for booklets, pamphlets, sales catalogs, and a variety of other purposes.

Some are designed to bind a book or booklet of any dimensions, as Wire-O, Cercla, Interlock, and Spiralock. Dual units of Cercla, for example, can be used in one backbone. Spiralock is a method of overlapping several spiral coils so as to bind many units in one cover.

Some of the bindings are loose-leaf, such as Swing-o-Ring, Tally-Ho, Multo, Limited, Streamliner, and No. 7. Others can serve as loose-leaf binders by accommodating paper with slits to the binding edge, permitting sheets to be placed in or removed from any desired position. While some permit the adding or removing of sheets at any position, others require making additions or removals at the end of the book.

Some of the bindings shown are made of wire, others are made of plastic and are available in a wide variety of colors. Many of the bindings can be used as concealed, semi-concealed, or fully exposed elements or devices.

Imposition simplified

Since there are no signatures, as such, to a flat bound book, in most cases the user can mix color pages or what would be inserts or tips in an edition bound book, with the regular sheets. He can with similar ease mix in sheets of different paper and swatch sheets without worrying as to their correct position in the signature for most efficient binding in.

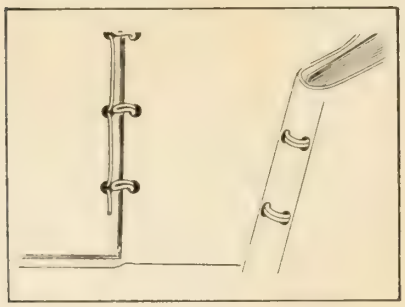
Since it is not necessary to print large signatures, there is little need to plan that a book be exactly 16, 32, etc., pages as odd size units can be readily accommodated. Of course paper and printing efficiency may still indicate that the conventional number of pages will be best.

There need be little if any problem regarding bleed pages. If a conventionally imposed 16, for example, will not accommodate all the bleeds called for in the layout and dummy, the imposition can be changed to accommodate 16 pages that are not necessarily consecutively numbered nor all in the same sixteen. This is because the flexibility of the process permits cutting the sheets apart and binding them in as single two-page sheets. This allows separate printing, where necessary, of special bleed sheets. Likewise, color pages appearing in the middle of a signature need not be printed with the large signature but can be efficiently run off on a smaller press or in an all-color form.

Another characteristic of flat bindings is that they will permit use of cover stocks or other paper or board or unusual materials as a booklet or pamphlet cover, and these materials can be printed on, in full color if so desired, varnished, die cut, laminated, and decorated in a wide variety of other eye-catching ways.

Specifications and diagrams of principal mechanical bindings

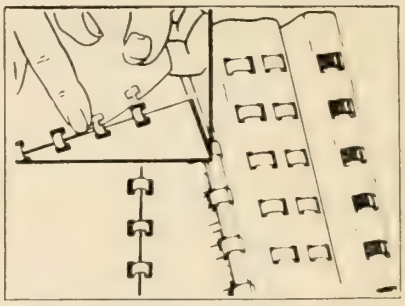
Aligno



Loops, which are farther apart than in other similar bindings, are made at intervals along a single wire. Ends of loops are closed, and wire in each loop is pressed together. Holes are round. Colors on request. Five sizes are made of nickel only.

Minimum binding edge	3"
Maximum binding edge	24"
Maximum book thickness	13/16"

Cercla



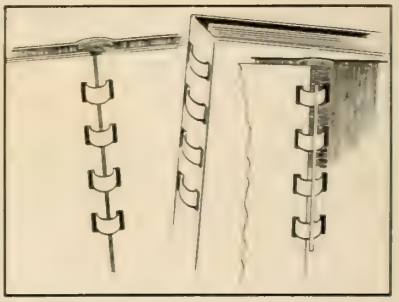
Smooth-edged, colored metal rings connected by flat backbone. Rectangular punch holes for permanent binding, or slot punch holes for loose-leaf use. Twelve standard colors and metal finishes. Diameters: 3/16" through 1". Can be used with wrap-around (one-piece), or two-piece paper, or case-made covers. Dual style, using two short binding elements, permits printing on backbone and adds to visible area of double-spreads. With

Cercla, continued

binding through back of one-piece cover (square back style), full backbone imprinting is possible at no extra cost.

Minimum binding edge	Any
Maximum binding edge	Any
Maximum book thickness	Any

Cerlox



(Continued on Page 382)



Spiral Binding Company, FIRST in the mechanical binding field, has remained FIRST by constantly striving to satisfy customer demands . . . by continuous technical research. TODAY semi-automatic and fully automatic equipment is made available to printers, bookbinders, and book manufacturers. SPIRAL'S new developments today, as always, anticipate the buyer's needs of tomorrow.

SPIRAL—the mechanical binding with a thousand uses. For all types of books. One piece or two piece covers . . . in competely concealed, semi-concealed, or exposed styles . . . in metallic, mat color or brilliant color finishs.

***Now*-ALIGN-O** newest member of the Spiral family. An improved wire binding consisting of multiple rings; semi-concealed. Perfect alignment of pages keeps them always in position. Widely accepted for better appearance.

***Now*-SPIRALASTIC** a plastic Spiral binding for jobs of quality, offering beauty, strength and utility. In a full color range.



***Now*-KAMKET** Loose-leaf multiple grip features frequency of rings, binds securely sheets of different sizes. Allows book to double back on itself. Permits addition of pages. Fully concealed nickel wire.

***Now*-DISPLAY BINDERS,** easel and pyramid styles, in all sizes with SPIRAL or KAMKET loose-leaf. The outstanding sales presentation.

DUMMIES BOUND WITHOUT ANY OBLIGATION

BINDING COMPANY
INCORPORATED

406 WEST 31st STREET • **NEW YORK, N. Y.** • ***Telephone:* Wisconsin 7-0800**

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54 WINTER STREET

CHICAGO, ILL.
111 NORTH CANAL STREET

CLEVELAND, OHIO
1101 POWER AVENUE

LICENSEES

Baltimore—Oscar T. Smith & Son Co.

Boston—Albany Novelty Mfg. Co.
Bay State Bindery Co.

Detroit—The Burkhardt Co.

Greenwood, Miss.—Lawrence Printing Co.

Manitowoc, Wisc.—Color Craft Printers

Philadelphia—Bless Bindery Co.
Philadelphia Bindery Co.

Pittsburgh—S. A. Stewart Co.

Rochester—Wm. F. Zahrndt & Sons

St. Louis—Letterhead & Check Corp.
J. Lewin Bookbinding & Sample Co

San Francisco—T. J. Cardoza, Ltd.

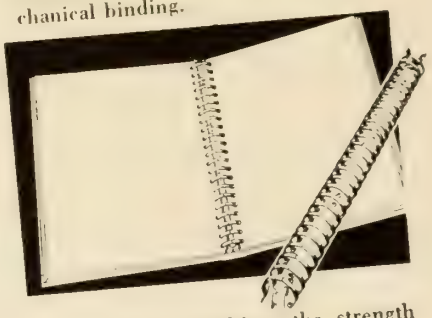
Manufacturing under patents 1,985,776, 1,995,590, 2,188,680, 2,216,706, 2,300,544; other patents pending.

Bound to

BINDERS?

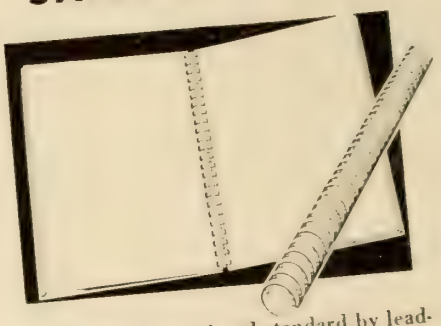


SWING-O-RING. Designed for hard usage and quick changes . . . combines ruggedness of old style ring bindings with all the advantages of low cost mechanical binding.

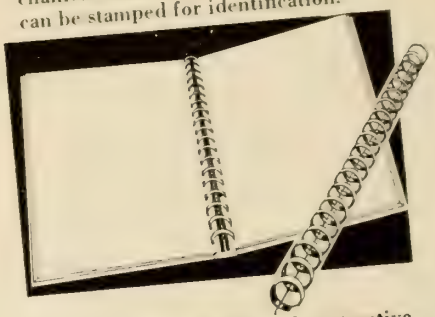


MULTO-RING. Combines the strength of permanent binding with the convenience of loose-leaf. Recommended for catalogs, sales presentations, price lists, sample, swatch, and note books, etc.

SALES PORTFOLIOS?



PLASTIC. Considered standard by leading printers, advertisers and publishers where a colorful, full-backbone mechanical binder is desired. Backbones can be stamped for identification.



CERCLA. The economical, attractive, colorful, metal mechanical binding ideally suited for big production runs where economy is an important factor.

Bindings by Brewer-Cantelmo are bound to please, bound to last . . . bound by binding specialists using up-to-the-minute equipment in our complete mechanical binding plant. We invite you to visit us or call for a representative to show you samples of our modern visual methods of dramatizing sales literature.

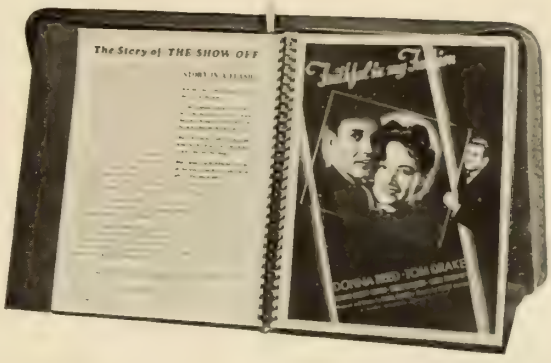
Brewer-

Please!

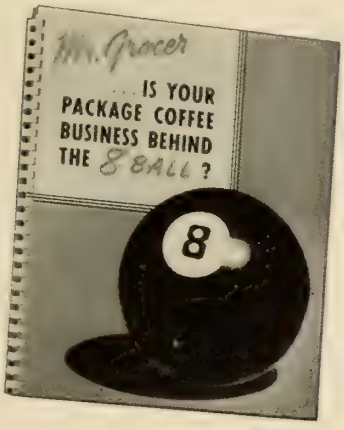
PRESENTATIONS? *What's Your Binding Problem?*



SOMETHING SUPER? Deluxe Presentations are our specialty. Let our creative craftsmen suggest a format and follow through on the manufacture whether in fine imported leather, hard covers laminated with cellophane, or limitless other unusual effects.



EASEL PORTFOLIOS? Give your sales representative the benefit of these easel back portfolios that stand up and sell. We manufacture easel binders in all sizes and styles, from plain single easels to double-easel, loose-leaf binding and zipper brief-case covers.



SOMETHING DIFFERENT? Let us send you samples of the rich, striking covers economically obtained by our creative craftsmanship . . . Glass-like finish Plastic materials, hot stamped in contrasting colors . . . rigid printed covers laminated with cellophane . . . you have to see samples to appreciate the originality and artistry of Brewer-Cantelmo creations.

Cantelmo co., INC.

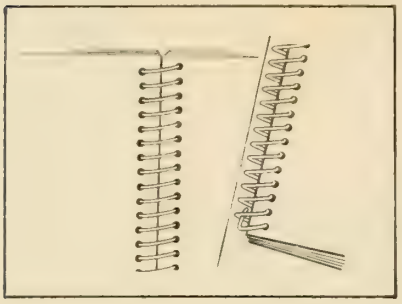
116 EAST 27TH STREET, NEW YORK 16, N. Y. • MURRAY HILL 5-1200

Cerlox, continued

Rings of colored plastic connected by thin backbone. Loose-leaf slot punching allows insertion of sheets easily. Back-to-back turning at any page. Diameters: 3/16" to 5/8". Used with one-piece (wrap-around) or two-piece covers of flexible or stiff material, cut flush or extended. Pull length, dual, or multiple binding styles. With wrap-around covers or with binding through back of one-piece cover (square back style), full backbone imprinting is possible at no extra cost. Many colors available.

Minimum binding edge ..... Any
Maximum binding edge ..... Any
Maximum book thickness ..... 4"

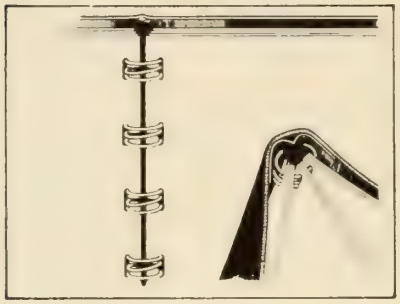
Coil



Single coil of wire spring is run through round holes. Has wide range of adaptability.

Minimum binding edge ..... 3"
Maximum binding edge ..... 24"
Maximum book thickness ..... 2½"

Flex-o-coil



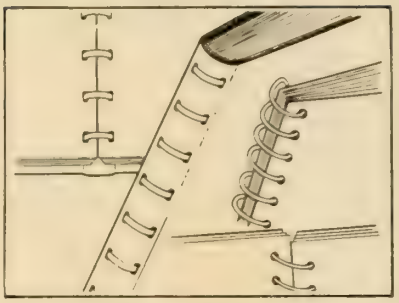
Loose-leaf in which single wire formed into loops of three coils is fitted into slotted sheets that are held in place by tension between the groups of coils. Page alignment is accurate. Available in exposed, semi-concealed, and concealed styles.

Minimum binding edge ..... 1"
Maximum binding edge ..... 36"
Maximum book thickness ..... 5/8"

Gee-gee twin loop and wire coil

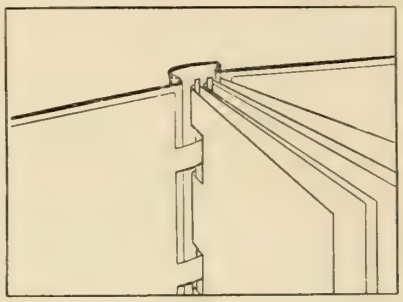
Uses double- or single-loop wire, concealed or semi-concealed; has constant alignment. Gee-gee machines can drill holes from 3/32" to 5/32" in diameter, with as many as ten holes to the inch if desired. These machines drill in either inch or metric scale, to meet any requirement.

Gee-gee, continued



Minimum binding edge ..... 1"
Maximum binding edge ..... 40"
Maximum book thickness ..... 1¼"

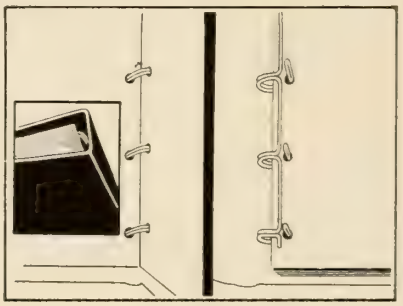
Interlock



Material lining inside of back and front covers forms loops across inside of backbone. One or more four-page units are inserted as follows: Unfolded four-page sheets are stacked, their binding edges notched to register with backbone loops. Sheets then are laid in open book and are held in place by narrow fiber strip interwoven between notches of sheets and the backbone loops.

Minimum binding edge ..... 2½"
Maximum binding edge ..... 30"
Maximum book thickness ..... Any

Kamket loose-leaf



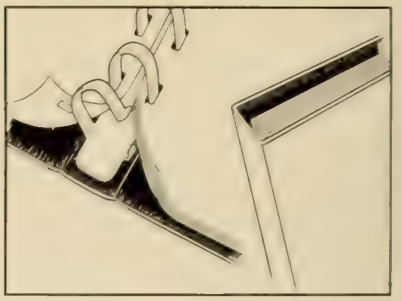
Continuous single wire forms series of equidistant, interconnected rings with open prongs. Wire passes through round holes, paper strip, or other material, not through cover, and is fastened on inside of back cover so that the two covers are integral for flat opening at any page. Pages are removable when prongs are held vertically; prongs are concealed when book is in use. Five sizes, nickel or enameled wire, wholly

Kamket, continued

hidden. Multiple grip features frequency of rings (9- to 11-inch binding length), minimizes lost or torn sheets, binds sheets of different sizes, allows book to double back.

Minimum binding edge ..... 3"
Maximum binding edge ..... 24"
Maximum book thickness ..... 13/16"

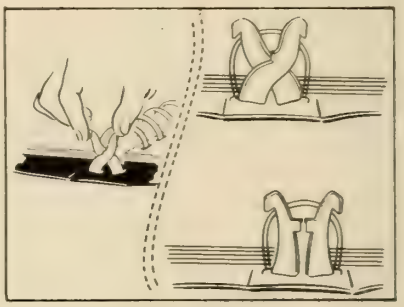
Limited



Metal binding in color or metal finishes in ½, 5/8, ¾, and 1" sizes. Rings are connected to a flat back that is riveted or glued to backbone of cover. Two or more can be used in one cover to bind books of 5" or thicker. Covers can be made refillable with Limited plate attachment. Suitable for display and other albums, fashion and check books, etc.

Minimum binding edge ..... 1"
Maximum binding edge ..... Any
Maximum book thickness ..... Any

Mult-o



Loose-leaf, multiple metal rings spaced every half inch. Pages lie flat in perfect alignment, can be removed without disturbing other sheets. In opening, rings split in middle by pressing top levers toward each other, close by pressing bottom levers toward each other.

Minimum binding edge ..... Any
Maximum binding edge ..... Any
Maximum book thickness ..... 1"

No. 7

Loose-leaf, consisting of circular wire prongs spaced an inch apart that are anchored to one side of metal backbone and hook into small catches on opposite side. Imprinting is possible on backbone, which is either exposed or concealed. At all times flat opening, sheet alignment perfect. Sheets may be inserted with ease.

(Continued on Page 384)

Custom Bindings

set the stage for sales!



Courtesy: Calvert Distillers Corp.

PUT SHOWMANSHIP INTO YOUR SALES PORTFOLIOS, DEALER PROMOTIONS, PRESENTATIONS

Samples of these sales-making productions available for your inspection . . .



Courtesy: Life and Fortune

Courtesy: Newsweek



Courtesy: The Borden Co.

DRAMATIZE your sales facts to make a deeper impression: dress them up in a custom-built portfolio that gives *your* sales story its best showing. SLOVES craftsmen are skilled in handling special binding effects in easel books, sales kits, etc. Before you start designing your salesman's aids, looks through our photo-file of successful sales *show*pieces. 'Phone us and see it today.

SLOVES BINDINGS:

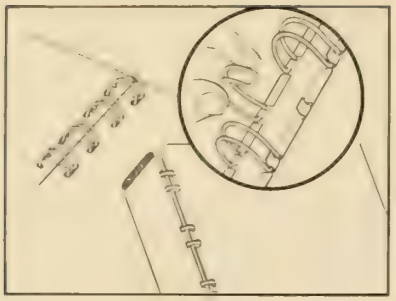
PLASTIC	CERCLA	COILED WIRE
LOOSELEAF	CERLOX (PLASTIC)	POST BINDERS
SWING-O-RING	SPIRALPLASTIC	STITCHING
MULT-O		SINGER SEWING

COMPLETE MOUNTING, FINISHING, HINGING AND PUNCHING SERVICES.

SLOVES mechanical binding co. inc.

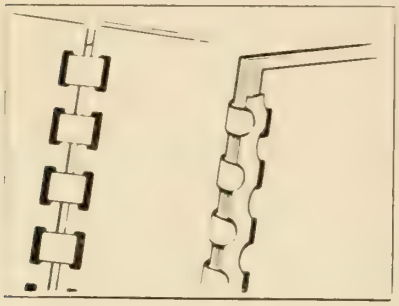
121 Varick Street, New York 13, N. Y. • WAlker 5-0304

No. 7, continued



Minimum binding edge ..... Any
Maximum binding edge ..... 20"
Maximum book thickness ..... 1½"

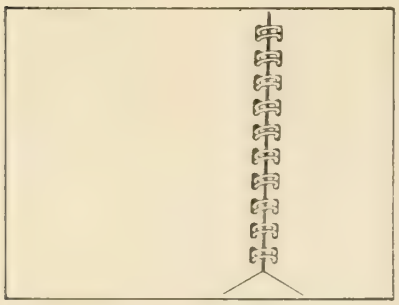
Nu-plast



Made of extruded plastic tubing cut into a series of rings linked to a continuous backbone, the ends of the rings being nested within corresponding notches cut into the mating edge of backbone. With wide backbone on two-piece cover books, effective backbone imprinting is possible; with narrow backbone it can be used full length on wrap-around (one-piece) cover or in dual or multiple binding styles with considerable saving in cost. Diameters: 3/16" through ½". Loose-leaf punching permits insertion of additional sheets after binding.

Minimum binding edge ..... Any
Maximum binding edge ..... Any
Maximum book thickness ..... 5/8"

Parallex

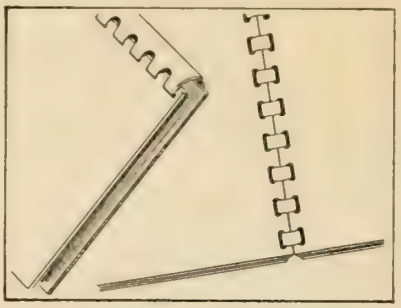


Single- or double-loop wire coil is run through either oblong or round holes; production cost is same in either case. Books can lie perfectly flat or folded cover to cover. Coils can be colored; variety of types of bindings that can be bound into one book by use of this method is limitless.

Parallex, continued

Minimum binding edge ..... Any
Maximum binding edge ..... 38"
Maximum book thickness ..... 1⅛"

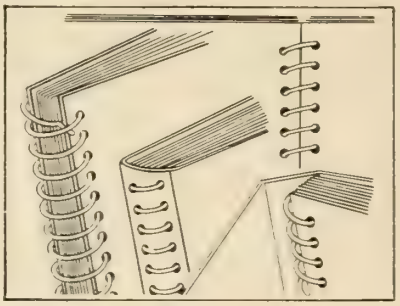
Plastic



Plastic is cut in form of solid back comb, rolled under heat to cylindrical shape of desired diameter and length. After covers and sheets are punched lengthwise along binding edge, plastic is inserted mechanically. Material is nonbrittle, nonbreakable, nonshrinkable, noninflammable, strong, durable. Flat opening provides perfect visibility, registration, alignment of sheets. Book-style backbone can be stamped. Minimum diameter of plastic roll is 7/32", maximum 1⅛". Comes in varying gauges; seven colors.

Minimum binding edge ..... ½"
Maximum binding edge ..... 20"
Maximum book thickness ..... 1⅛"

Spiral



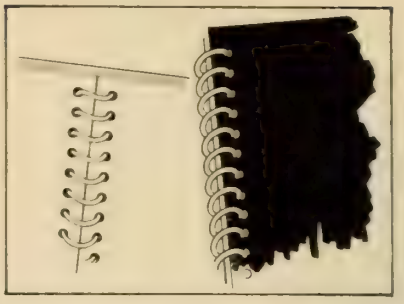
Plated wires in spiral form run through round holes punched along back. Exposed, semi-exposed, and concealed styles available in brass, bronze, copper, aluminum, and other wire. Semi-concealed type uses one-piece cover; in concealed style, wire passes through separate strip of material fastened to inside of back cover, not through cover. Both allow printing on backbone. Books 3 to 4 inches thick are bound by double Spiral, and double and triple interconnected Spiral bindings are used for thicker books.

Minimum binding edge ..... 1"
Maximum binding edge ..... 30"
Maximum book thickness ..... 2"

Spiralastic

Plastic spiral formed from continuous plastic filament. Available in numerous colors and gauges in exposed, semi-concealed, and concealed styles.

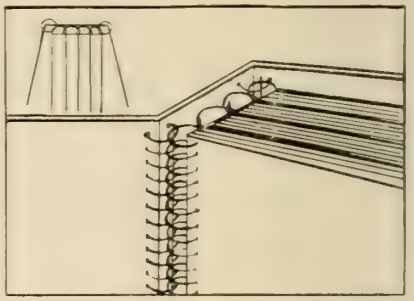
Spiralastic, continued



Its resistance to breakage and combination of attractive appearance and mechanical strength makes it particularly adaptable to catalogs, manuscripts, portfolios, and easel presentations.

Minimum binding edge ..... 1"
Maximum binding edge ..... 30"
Maximum book thickness ..... 1½"

Spiralock



Two sets of coils are run through holes in binding edges. Unlimited number of binding units can be inserted into book; pages in each unit are held together by spiral coil. Loops of each coil overlap loops of coils on either side, and fiber or wire strips run down the holes created by the overlapping hold coils together.

Minimum binding edge ..... 1"
Maximum binding edge ..... 30"
Maximum book thickness ..... Any

Streamliner



Loose-leaf with nickel-plated steel, not wire, construction, with continuous rings that do not split in the center. A lever locks binder in either closed or open position. Sheets lie flat and align. Metal is made to take standard plastic punching. Can be used with almost any type of cover desired.

(Continued on Page 386)

TAUBER *an old name in Plastic Binding*
. . . an even older name in bookbinding



For 37 years Tauber's Bookbindery, Inc, has been serving the trade with its well-known "28 services."

Let Tauber's quote on that very next job. You'll be in good company.

1. Calendars
2. Tin Edging
3. Tubing
4. Wrapping
5. Mailing
6. Shipping
7. Perforating
8. Scoring
9. Stringing
10. Silk Stitching
11. Label Cutting
12. Punching
13. Tabbing
14. Indexing
15. Pamphlet Binding
16. Wire Stitching
17. Folding
18. Tipping
19. Collating
20. Edition Binding
21. Creasing
22. Smythe Sewing
23. Singer Sewing
24. Sealing
25. Padding
26. Eyeletting
27. Die Cutting
28. Mounting

Millions of books have been bound with Tauber Plastic Bindings since those early pioneering days when Tauber-Tube was first introduced.

TAUBER-TUBE is a modernized, much improved design of the original. Inserted without machinery in Tauber-Tube slots.

TAUBER ROUND RINGS are loose-leaf plastic rings which are inserted in standard round holes without machinery.

TAUBER MULTI-RINGS are spun into Tauber-Tube slots by hand.

TAUBER S-RINGS are rectangular in cross section and lock securely in regular round holes.

TAUBER-TWIST is used in gang hole punchings and are twisted into place by hand.



Each of these fine plastic bindings is available in many sizes and colors. Send for samples.

TAUBER'S BOOKBINDERY, INC.
200 HUDSON STREET • NEW YORK 13, N. Y.

TAUBER PLASTICS, INC.
200 HUDSON STREET • NEW YORK 13, N. Y.

bindings . . . . . .



- PLASTIC
- CERCLA
- LIMITED
- FLEX (COIL)
- PLASTI-FLEX
- MULTO
- loose leaf, sewing,
- cover-making, etc.

BY THE *Flex-Craft* BINDERY

SALES PRESENTATIONS
of every description

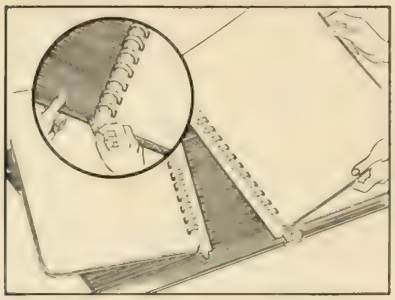
Geared for Service

THE *Flex-Craft* BINDERY • 237 49th ST., BROOKLYN 20, N. Y.
PHONE: GEdney 9-5141

Streamliner, continued

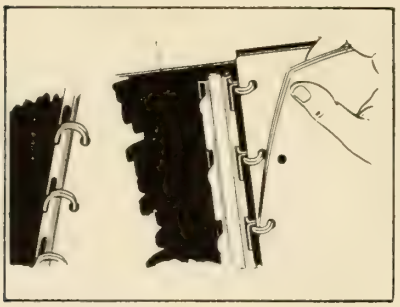
Minimum binding edge 3"
Maximum binding edge 20"
Maximum book thickness 1/2"

Swing-o-ring



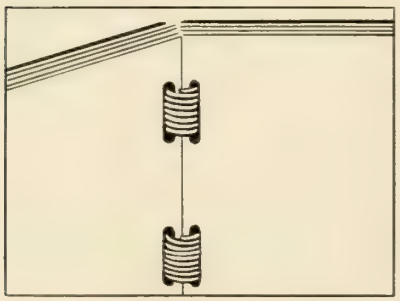
Loose-leaf metal in which multiple rings set close together prevent pages from tearing out even when lightest weight stock is used. Sheets lie flat and in perfect alignment. Scissor-like action permits pages to be added or removed easily. In chrome nickel finish only. Available in any length. Diameter of rings: 3/8, 1/2, 5/8, 3/4, 1".
Minimum binding edge ..... 2 1/2"
Maximum binding edge ..... 40"
Maximum book thickness ..... 1"

Tallyho



Loose-leaf, consists of thin, lightweight, nickel plated steel strip to which is hinged a series of fully concealed wire rings. Rings drop into slots in steel plate. Binding metal is locked or unlocked by moving contents up or down. Pages open flat and align perfectly; the multiple rings prevent the pages from tearing out.
Minimum binding edge ..... 3"
Maximum binding edge ..... 14"
Maximum book thickness 7/8"

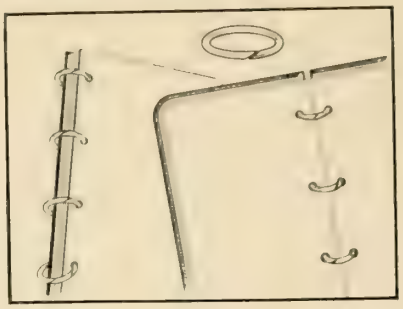
Tauber multi-ring



Tauber multi-ring, continued

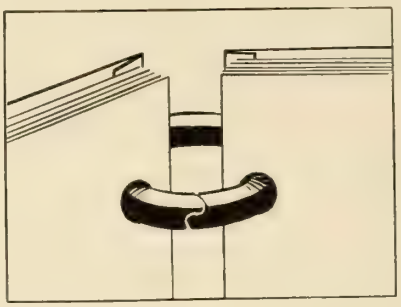
Short, closely wound plastic coils that fit standard Tauber-tube slot holes. Rings are spun into place without machinery. A number of rings may be used; many colors and sizes available.
Minimum binding edge Any
Maximum binding edge ..... Any
Maximum book thickness 1"

Tauber round rings



Loose-leaf plastic round binding rings that are inserted by hand into standard round holes. Rings close smoothly, leaving no projections to tear pages. Available in many colors and sizes. Can be used in open-back, semi-concealed, and concealed bindings, any number from two up.
Minimum binding edge Any
Maximum binding edge ..... Any
Maximum book thickness 1"

Tauber s-ring

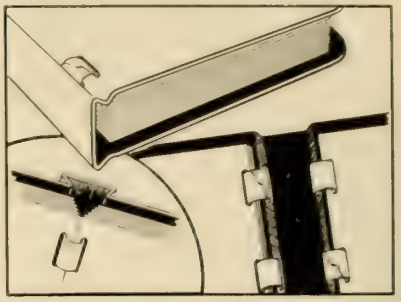


Individual plastic binding rings with positive closure that locks with snap action, yet may be reopened easily for looseleaf use. Fits standard round holes. Any number of rings may be used; various colors available.
Minimum binding edge ..... Any
Maximum binding edge ..... Any
Maximum book thickness 1"

Tauber-tube rings

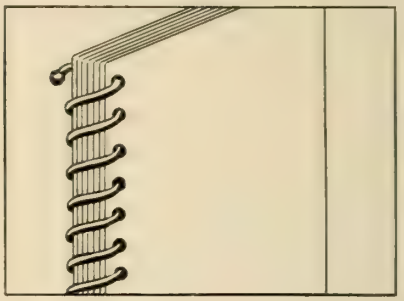
Individual plastic flat binding rings that lock with a snap and are adaptable to many forms of binding—open back, semi-concealed, and concealed, loose leaf or permanent. No machinery necessary for closing. Any number from two up can be used; available in many colors and sizes. Sheets lie flat, with their alignment perfect in this style binding.

Tauber-tube ring, continued



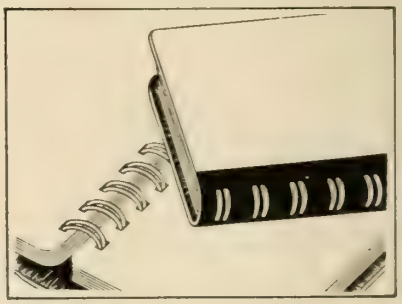
Minimum binding edge Any
Maximum binding edge Any
Maximum book thickness 1"

Tauber-twist



Continuous plastic binding that is pre-formed to fit standard multiple hole punchings; insertion easy, without machinery. Ends of binding are locked in place. Can be used in many styles; wide variety of colors available.
Minimum binding edge ..... Any
Maximum binding edge ..... Any
Maximum book thickness 1"

Wire-o



Series of double wire loops formed from single continuous steel or brass wire run through longitudinal slots along back of book. Double-cover type leaves binding exposed; single conceals partly. Binding can be completely concealed by wiring book into lining for paste-down sheet (semi-exposed style), then using as limp or stiff cover, fast-bound, or loose-leaf, through slotted holes. Pages lie flat in perfect alignment, turn back to back. Binding can be omitted at top, bottom or center. Lacquered wire, nine regular, nine metallic shades.
Minimum binding edge ..... Any
Maximum binding edge ..... Any
Maximum book thickness ..... Any

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Edition binding

Consult binder when job is being planned regarding such problems as imposition, paper, ink, and binding styles, to obtain efficient production

Walter Meyer

In planning a book, a paper should be selected that is suitable for the process of printing to be used. It should be made certain that the grain of paper runs with the binding edge. There is no exception to this rule. Should the book be oblong or upright, the grain of text paper, end papers, and cover materials must run parallel to the binding edge. This allows the book to be opened with the least strain, to be more easily read, and prevents warpage of covers.

Determining the style

The style of binding should be based on the purpose of the book. If it is to be used for an advertising brochure to be read but a few times, a good cover paper may be used over boards. This may be printed before the cover is made. If the book is a catalog or textbook, a stronger cover material such as a heavy cloth, buckram, or imitation leather should be used.

The decoration of covers should also conform with its use. A book used by mechanics or tradesmen should have a greaseproof cover, a number of which cover materials are available.

Books used in laboratories or around chemicals should never be stamped with artificial gold, as they may tarnish in a short time. Genuine gold, ink, or foils may be used. Handbooks, such as salesmen's pocket books, may be flexible bound with round corners to facilitate easy handling. Textbooks, or books of larger sizes, should have heavier covers. Bibles may have flexible or hard bindings, depending on anticipated use.

It is wise to consult a binder on problems of paper, binding styles, and strength and, above all, to obtain his imposition before printing. Many difficulties may be averted by printing a lay mark or nailhead on all forms. This will show the printer and binder his guide edges for folding and cutting. Not all edges of the printing sheet may be precisely square. This nailhead will insure that the guides will operate on the squarest edges and that printer, binder, and finisher will use the same guide edges in their successive steps.

When arranging inserts in a book, they should be placed between signatures if at all possible. If there are a number of inserts, they should be made up in four-page wraps. This is less expensive than tipping or placing inside signatures.

While two-page (single sheet) inserts can be tipped or glued in at any position, it is less expensive to position them at the ends of a signature or at a position where the folded but untrimmed signature will open freely without hand cutting.

Signatures of four pages or more are usually sewn in. Sewn inserts usually are more permanently in place than those tipped in. Tipped signatures should avoid bleed designs into the binding edge on the side to be glued, as the inks used may not provide a good adhesive surface for the glue.

When printing on oversize paper, tails on the outside of the sheet should be avoided. It is better to spread the forms so as to give an equal trim on all pages. If the plates have been made and the paper is oversize, it is best to trim the paper before printing. This procedure is also less expensive.

Basic binding styles

The basic binding styles and methods of reinforcement used in book manufacturing are illustrated on the following pages. Figure 1 illustrates a Smyth sewed book; the full paper cover is glued to the back only. This is flat opening. To make a stronger book, the cover can be glued to the first and/or last leafs or end papers.

The book in Figure 2 can be Singer or Smyth sewed. It has a full paper cover over boards and overhang edges. It may have a razor back or a board down the spine. This is called a case bound book. Figure 3 shows a similar book with paper sides and a cloth back. It is stronger, more costly, and could have a full cloth cover.

Figure 4 illustrates a book with a rounded back, full cloth cover over boards, and is Smyth sewed. It is the most practical and strongest method of binding a large book that should open flat and be easily read. The book may be reinforced (as illustrated in Figures 17-23).

Figures 5, 6, and 7 depict variations of the style illustrated in Figure 4, employing different combinations of cloth and paper, etc. This is for decorative effect only, and does not add to the strength of the book.

The book in Figure 8 has rounded corners and a flexible full leather cover. It is practicable for books such as dictionaries, Bibles, and catalogs, providing they are not too heavy or bulky. It is easily handled and read.

The legal binding in Figure 9 has a buckram cover with leather labels or foil or ink panels. It is a good, strong binding for books that must withstand considerable handling. The book in Figure 10 is similar to that in Figure 8, and can be made with a leather lining.

The Divinity Circuit style illustrated in Figure 11 is also similar to Figure 8 but has overlapping edges that protect leaves from dust and light. Such books usually have gilt edges. The book in Figure 12 has the additional protection of a zipper.

Figure 13 illustrates a book that is side thread sewed. This is the strongest method of binding and is used on textbooks and catalogs that demand exceptional lasting qualities, but it is not as flexible nor as flat opening as a Smyth sewed book. The style shown has a flat back and a fabric cover over boards with visible twill joints. Figure 14 is similar but has a rounded back.

The textbook style in Figure 15 has tapes through drilled holes. It is slightly more flexible than a side thread sewn book but not as strong and in general less practicable.

Figure 16 shows a work book. It has perforated leaves that are drilled for a looseleaf binder. The cover is side wire stitched, and it also has a cloth back.

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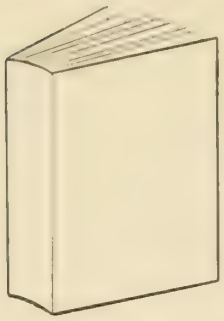
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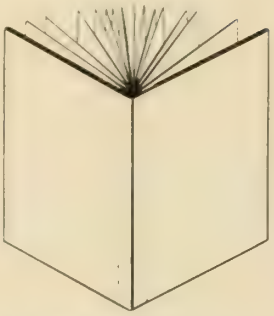
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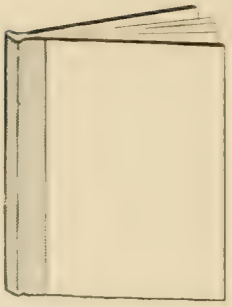
Edition binding, continued: principal styles



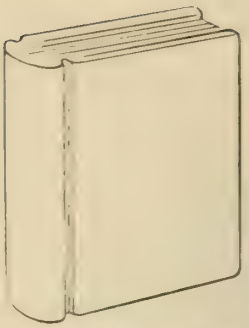
1. The Smyth sewed book in full paper cover.



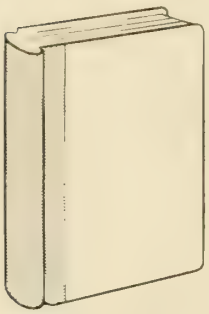
2. Full paper cover as it is used over boards.



3. Paper cover over boards, with cloth back.



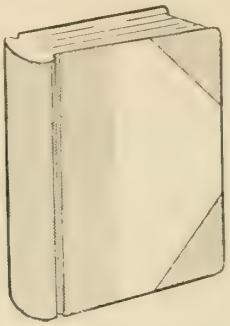
4. Rounded back, used with a full cloth cover.



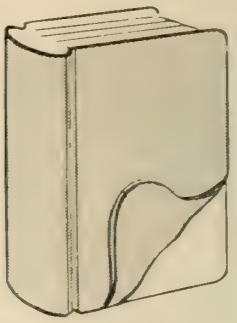
5. Quarter binding: a paper cover, cloth back.



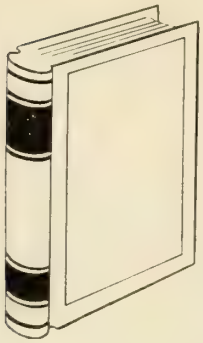
6. Half binding, showing cloth back and covers



7. Three-quarter binding: cloth back, covers.



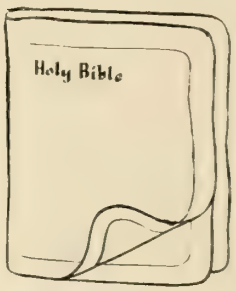
8. Rounded corners, in using full leather cover.



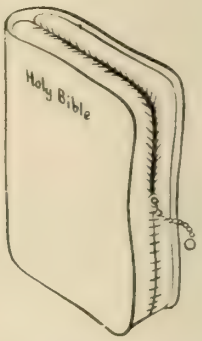
9. Legal binding, with durable buckram covers.



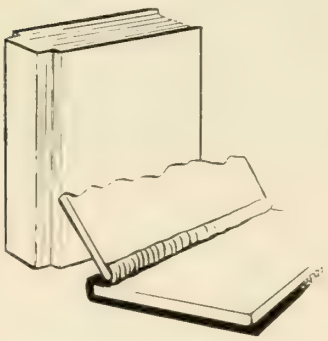
10. Full leather cover and a leather lining.



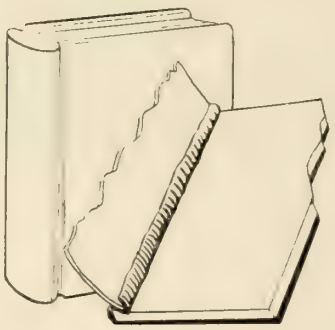
11. All-leather cover with overlapping edges.



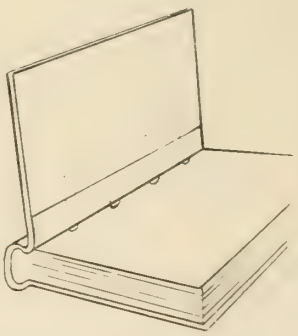
12. Leather cover with zipper protected edges.



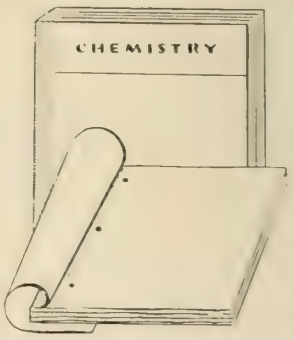
13. The strongest: side thread sewn, flat back.



14. Side thread sewn, but using rounded back.



15. Tapes through drilled holes for textbooks.



16. Side wire stitched, cloth back for work book.



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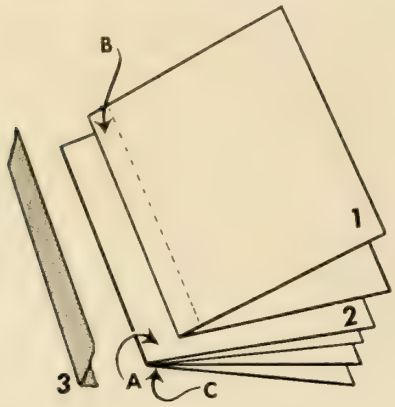


Figure 17 at left shows the strengthening of Smyth sewed books by muslin reinforcing the first and last signatures, the points of greatest strain. This should be done for all heavy books or those that will receive much handling.

The endpaper (1) is pasted to the end signature (2) along the binding edge (A). A muslin strip (3) is affixed to the endpaper along the edge (B) to dotted line and extends around signature (2) at (C). Joint extends on endpaper ¾ inch and around signature about ¼ inch.

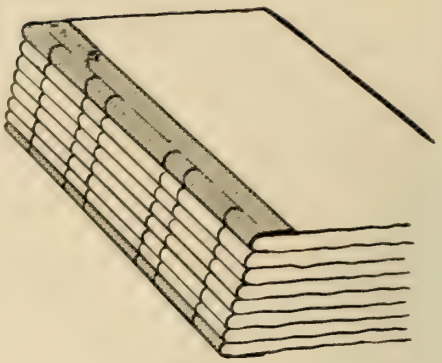


Figure 18 at right illustrates the front and the back muslin joints of the sewed book.

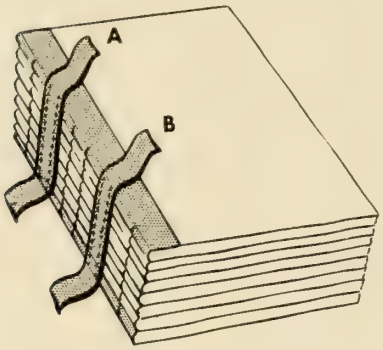


Figure 19 illustrates tape reinforcing. During the sewing together of the book signatures, two or more tapes (A and B) are sewn to them and extra tape is folded down between each book to permit cutting and taping onto front and rear endsheets. In edition binding, muslin reinforcing has practically replaced tape because of cost and speed in expediting.

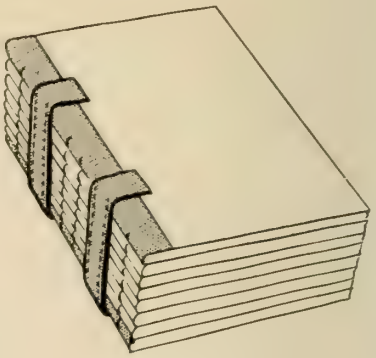


Figure 20 shows the fully reinforced book. This method is used mostly on blank books.

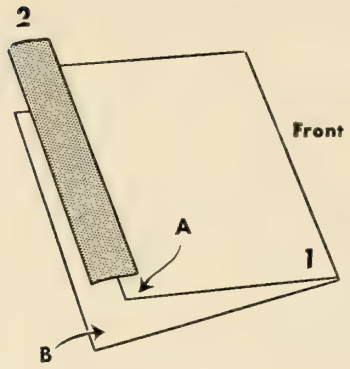


Figure 21 at left illustrates the use of visible twill or canvas joints. These must be utilized on side sewed books to get the full benefit of the strength obtained from the sewing. The endpaper (1) is folded along the front edge with the cover paste-down leaf shorter than the fly leaf. The twill joint (2) is affixed along two edges of endpaper (at A and B).

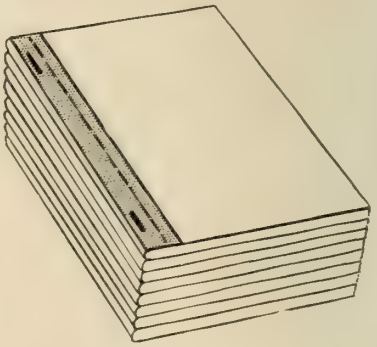


Figure 22 at right pictures the finished book.

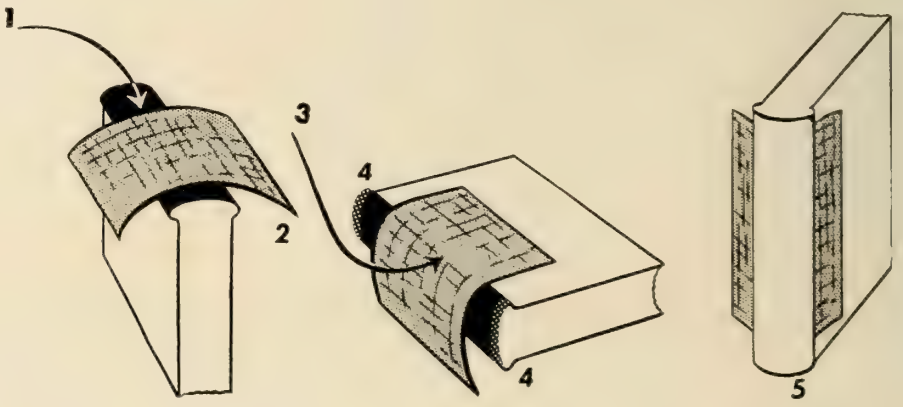
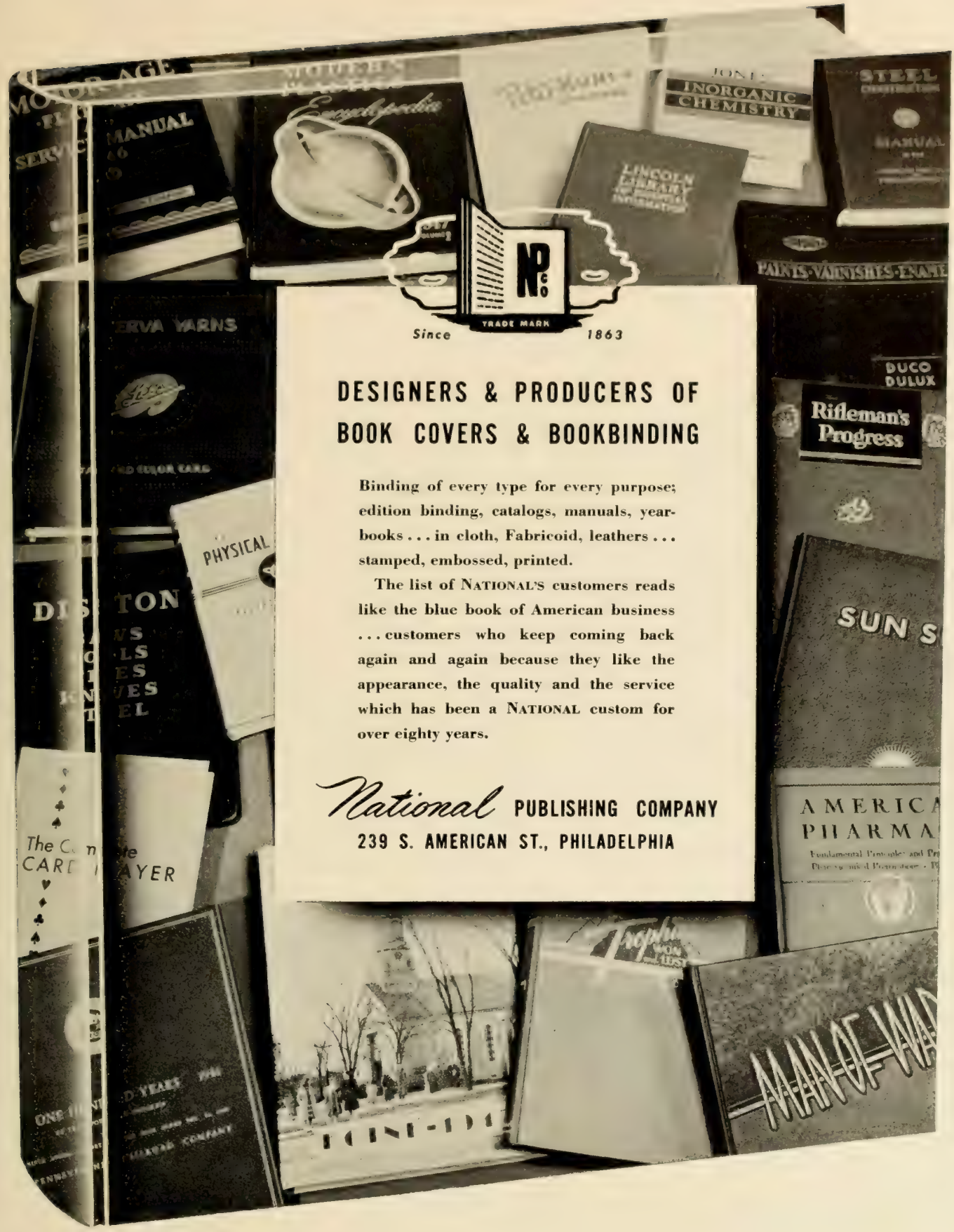


Figure 23 demonstrates lining and headbanding. A coating of flexible glue is applied over the entire binding edge (1) and a piece of crash cloth (2) placed over the glued back. The cloth extends loosely around the endpapers. Another coating of glue is applied to the back as at (3). Headbands (4) are then affixed. A piece of kraft paper the full width and length of the backbone is then affixed over it (5).


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Book cloth specifications

Commercial standards for starch-filled and impregnated book cloths; comparable cloths are grouped for each of principal grades and classifications

Revised by the editors

The material in this article has been taken from the United States Department of Commerce Commercial Standard CS57-40, a revision of June 20, 1940. The tables were brought up to date by the editors of PRODUCTION YEARBOOK.

Scope: The standards of quality and the test procedure herein described are intended to apply to book cloths and buckrams, which are starch filled, and to the so-called impregnated fabrics used for edition, textbook, trade, catalogue, and all other than library bindings.

General requirements: The finished fabric shall be free from pinholes and blemishes that may effect the appearance or serviceability of the material. It must be suitable for use on automatic-feeding devices on case-making machines. The base fabric shall be made of cotton thoroughly cleansed and free from waste. It shall be evenly woven and free from an excessive number of imperfections of manufacture. The weave shall be plain, except that the warp yarns of the medium and heavy weight buckrams, both the starch filled and the impregnated, shall be woven in pairs.

Finished weight: The manufacturers of the materials conforming to these specifications may vary the finished weight of their fabrics, for the purpose of producing suitable finishes, provided the requirement covering freedom from pinholes is complied with. No limitation is placed on the weight of the finished fabric unless the purchaser specifically designates a limit in the purchase order.

Stripped-cloth weight: The standard of weight comparison shall be the weight of the fabric that remains after the finished fabric has been stripped of all starch and loading, or impregnating material. The weight of the stripped fabric shall be designated the "stripped-cloth weight" and it shall be expressed in ounces per square yard.

Thread count: The thread count shall be expressed as the number of threads in a square inch, the sum of the warp and filling threads, unless the purchaser shall specifically choose some other factor.

Breaking-strength sum: For this standard, the breaking-strength sum shall be the sum of the warp and filling averages expressed in terms of pounds per inch strip of the finished fabric.

To classify the bookbinding fabrics covered by these specifications, the following general divisions are established:

Book cloths, starch filled and impregnated

Group	Weight
A	Light
B	Medium
C	Heavy
C-1	Heavy
D	Light
E	Medium
F	Heavy

The bookbinding fabrics covered by groups A, B, C, C-1, D, E, and F shall equal or exceed the minimum requirements given in the table at lower left.

The group numbers A to F for starch-filled cloths and impregnated cloths (and the group numbers AA to DD for pyroxylin coated cloths) refer to the following tables of minimum requirements:

Group	A	B	C	C-1	D	E	F
Stripped cloth wt. per oz. per sq. yd.: Not less than	1.7	2.1	3.4	4.2	4.7	6.5	7.9
Warp plus filling threads per inch: Not less than	92	104	104	94	58	106	110
The breaking strength sum* (sum of warp and filling): Not less than ..... lbs.	60	77	105	120	110	165	200
The breaking strength*: Not less than ..... lbs. for warp	38	50	55	64	65	100	120
The breaking strength*: Not less than ..... lbs. for filling	15	20	42	48	35	55	70

*25 per cent less for embossed cloths.

Starch-filled cloths

Group A

Bancroft: Eton
Brookfield: Amherst
Columbia: Minerva, Pass Book
Holliston: Novelex, Vellum
Interlaken: Imco, Imco Flaxen
Special Fabrics: Saylin, Saylvel
Western: Velltex

Group B

Bancroft: Oxford, Statron
Brookfield: Briarcliff, Baylor, Bennington Black, Bennington Colors

Columbia: Title Vellum
Holliston: Rex, Sharon, Waverly Black, Waverly Colors, Extra

Interlaken: Vellum DeLuxe, V.D.L. Flaxen, Class A, Blacks, Common, Extra

Special Fabrics: Saylux, Saylbound, Saylcom Black, Saylcom
Western: Libertex, Parchment

Group C

Bancroft: Linen Finish
Brookfield, Cornell
Columbia: Samson-Hevi-Duty
Holliston: Aldine
Interlaken: Art Vellum, A.V. Flaxen
Special Fabrics: Sayltex
Western: Atlas

Group C-1

Bancroft: Devon
Brookfield: Claremont
Columbia: Colonial Linen
Holliston: Classic
Interlaken: Kent
Special Fabrics: Saylking
Western: Beaverbrook

Group D

Bancroft: Buckram
Brookfield: Danbury Buckram
Columbia: Nu-Bradford Buckram
Holliston: Record Buckram Vellum, Record Buckram English Finish, Record Buckram Crash Finish.

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Starch-filled, Group D, cont.

Interlaken: Guild Buckram, Crash, Guild Buckram Flaxen
Special Fabrics: Saylrock
Western: Duro Buckram

Group E

Bancroft: Medium Weight Buckram
Brookfield: Edinburgh Buckram
Holliston: Caxton Buckram
Interlaken: Bindery Buckram
Special Fabrics: Sayltuff
Western: Standard Buckram

Group F

Bancroft: Legal Buckram
Brookfield: Fairfax Buckram
Holliston: Library Buckram
Interlaken: Art Buckram
Special Fabrics: Saylbuck
Western: Federal Buckram

Natural finish cloths

Athol: Terek Teralin (pyroxylin impregnated)
Holliston: Novelex
Interlaken: Imco Natural
Western: No. 48 Flaxtex

Columbia: Fictionette
Special Fabrics: Saylruff A

Bancroft: Natural Finish
Brookfield: Natex
Columbia: Lynbrook
Holliston: Zeppelin
Interlaken: Winco
Western: Flaxtex Natural No. 72

Special Fabrics: Saylruff D
Western: Fineflax

Bancroft: Buckram Natural Finish
Columbia: Bolton
Interlaken: G. B. Natural

Bancroft: Lynnene
Western: Flaxolin Natural

Impregnated cloths

Group A

Athol: Terek Dublin Linen, Terek Dublin Vellum
Bancroft: Arrestox A, Arrestox Heather
Brookfield: Lasholyn A Linen, Lasholyn A Vellum
Carpenter: 60 BC
duPont: PX 00 Linen, PX 00 Solid
Holliston: Roxite FS Linen, Roxite DF Vellum
Interlaken: Arco 00 Linen, Arco 00 Vellum
Special Fabrics: Impregnated Saylvel
Western: Velltex Impreglin
Zapon-Keratol: Booktex 0 Linen, Booktex 0 Vellum

Group B

Athol: Terek Twelvmo Linen, Terek Twelvmo Vellum, Terek Edition
Bancroft: Arrestox B
Brookfield: Lasholyn B Linen, Lasholyn B Vellum

Impregnated, Group B, cont.

Carpenter: 70 BC, 140 BC
Columbia: Textite Milbank Linen, Textite Milbank Vellum
duPont: PX 10 Linen, PX 10 Solid, PX 20 Linen, PX 20 Solid
Holliston: Roxite XL Linen, Roxite LS Vellum
Interlaken: Arco 1 Linen, Arco 1 Vellum, Arco 2 Linen, Arco 2 Vellum
Special Fabrics: Impregnated Saylux, Impregnated Saylbound, Impregnated Saylcom
Western: Libertex Impreglin, Parchment Impreglin, Sussex Impreglin
Zapon-Keratol: Booktex A Linen, Booktex A Vellum, Booktex B Linen, Booktex B Vellum

Group C

Athol: Terek Linen, Terek Book
Bancroft: Arrestox C
Brookfield: Lasholyn C Linen, Lasholyn C Vellum
Carpenter: 180 BC
Columbia: Textite Riverside Linen, Textite Riverside Vellum
duPont: PX 30 Linen, PX 30 Solid
Holliston: Roxite HS Linen, Roxite HS Vellum
Interlaken: Arco 3 Linen, Arco 3 Vellum
Special Fabrics: Impregnated Saylking, Impregnated Sayltex
Western: Atlas Impreglin Linen, Atlas Impreglin Vellum
Zapon-Keratol: Booktex C Linen, Booktex C Vellum

Group C-1

Athol: Terek 11000
Bancroft: Arrestox S
Brookfield: Lasholyn C-1 Linen, Lasholyn C-1 Vellum
Carpenter: 190 BC
Columbia: Textite Colonial Linen, Textite Colonial Vellum
duPont: PX 40 Linen, PX 40 Solid
Holliston: Roxite CL Linen, Roxite CL Vellum
Interlaken: Arco 4 Linen, Arco 4 Vellum
Special Fabrics: Impregnated Saylking
Western: Beaverbrook Impreglin
Zapon-Keratol: Booktex CX Linen, Booktex CX Vellum

Group D

Athol: Terek Marine Buckram, Terek Homespun
Bancroft: Arrestox Buckram
Brookfield: Lasholyn Danbury Buckram
Carpenter: Buckram D
Columbia: Textite Nu-Bradford Buckram
duPont: PX Buckram 6 Linen, PX Buckram 6 Solid
Holliston: Roxite Record Buckram Vellum, Roxite Record Buckram Linen
Interlaken: Arco Guild Buckram
Special Fabrics: Impregnated Saylrock
Western: Duro Impreglin Buckram
Zapon-Keratol: Booktex D Linen, Booktex D Vellum

Group E

Athol: Terek Armour Buckram
Bancroft: Arrestox Medium Weight Buckram
Brookfield: Lasholyn Edinburgh Buckram
Carpenter: Buckram E

Impregnated, Group E, cont.

duPont: PX Buckram 7 Linen, PX Buckram 7 Solid
Holliston: Roxite Caxton Buckram
Interlaken: Arco Bindery Buckram
Special Fabrics: Impregnated Sayltuff
Western: Standard Impreglin Buckram
Zapon-Keratol: Booktex E Linen, Booktex E Vellum

Group F

Athol: Terek Atlas Buckram
Bancroft: Arrestox Legal Buckram
Brookfield: Lasholyn Fairfax Buckram
Carpenter: Buckram F
duPont: PX Buckram 8 Linen, PX Buckram 8 Solid
Holliston: Roxite Library Buckram
Interlaken: Arco Art Buckram
Special Fabrics: Impregnated Saylbuck
Western: Federal Impreglin Buckram
Zapon-Keratol: Library, Booktex F

Pyroxylin coated cloths

artificial leather

Group AA

Athol: Terek Leather Cloth 00S
Brookfield: Lashokote 540X
Carpenter: 85
duPont: Fabrikoid 1100
Holliston: Sturdite 7X
Permatex: 312
Textileather: 2178
Western: X-1 Joanna
Zapon-Keratol: Super Tasco

Group BB

Athol: Terek Leather Cloth 301
Brookfield: Lashokote 360
Carpenter: 180
duPont: Fabrikoid 700
Holliston: Sturdite 18
Permatex: BG
Textileather: 2055
Western: A Joanna
Zapon-Keratol: Keratine

Group CC

Athol: Terek Leather Cloth 304
Brookfield: Lashokote 360X
Carpenter: 185
duPont: Fabrikoid 750
Holliston: Sturdite 18X
Permatex: Tioga
Textileather: 2057
Western: A-1 Joanna
Zapon-Keratol: Elco

Group DD

Athol: Terek Leather Cloth 651
Brookfield: Lashokote 185
Carpenter: 245
duPont: Fabrikoid 2800
Holliston: Sturdite 24X
Permatex: Seminole
Textileather: 3060
Western: D-328 Joanna
Zapon-Keratol: M Drill

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- Plastic Binding adds a brilliant, extra color to every inside page.
- Plastic Binding enables every page to swing freely and lie flat.
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Finishing operations

Printer should be told of all finishing techniques required by a job so that he can properly plan imposition, paper, ink, margins, and schedules

William A. Freedman

There are available many techniques, generally known as finishing, that can be applied to a printed piece either to improve its appearance or to make it more functional than it would otherwise be. Many of the finishing techniques are hand processes, many are machine processes. In any event, the methods and equipment of the finisher must be considered in laying out a job so that when he gets the printed piece he will not reject it with such comments as "grain direction wrong" or "wrong edge used for gripper" or "paper stock and ink used make handling difficult."

Not all the many kinds of finishing described below are performed by one company. The printer usually knows the various trade finishers and what each can do. While the buyer of printing as a rule does not deal directly with the finisher, he should acquaint his printer with all the finishing techniques that will be required to complete the job so that the printer can coordinate his imposition, paper, ink, margins, trim, schedule, etc., with the requirements of the finisher.

The printer should be so informed when the job is in the layout stage so that he can recommend, where desirable, slight changes in layout or production procedure that will at once make for a better and more efficient job for both the customer and the printer.

The following list of finishing techniques, while not all-inclusive, is quite comprehensive and will give the reader an idea of the services available, as well as some suggestions regarding their most efficient use.

Assembling: Includes eyeletting, pasting, collating, gathering, packing. It should be made certain that all components from different sources are supplied in time; samples of each should be checked for correctness and quality, as assembler may not know requirements. Sufficient "overs" should be supplied to cover loss, breakage, rejections. Deliveries may have to be scheduled according to the available floor capacity of the assembler.

Bevel edging: May be gold, silver, or other metallic leaf, or any color. Cards must be bevelled before easels, constructions, etc., are attached, and thus may need handling to bevelling plant and back. Time element, packing, and trucking costs to be considered. Cards should be thick enough so that enough bevelled edge will show to justify bevelling. If thin cards must be used, a flatter bevel may be specified. Beveller should be provided with some blank boards the same size as cards; cards are bevelled in small lifts, and blanks protect top and bottom card of each lift.

Blind stamping: Best done with brass engraved dies. Binder's stamp electros can be used for crude work, short runs. Simple stamping such as trade-mark or identifying key may be included with a diecutting or printing form.

Bordering: Handsome decoration for announcement cards, greeting cards, etc. Many widths and colors available.

Color edging: The finishing of edges of displays, especially when diecut outlines preclude bevel edging. Used on extra thick chipboard or wood displays.

Easeling: The average display card usually is well supported by a single wing chipboard easel. Extra heavy or wide-based cards may require double wing easels. Standard sizes of both styles are stocked by the finisher, but he should receive time to obtain materials and prepare easels for a long run. Design of display sometimes necessitates a special bottom slant or easel design. When easeled display cards are packed in bulk, they should be faced and slip-sheeted to protect the surface.

Embossing: A permanently raised ornamentation accomplished by using brass engraved dies, heat, great pressure, and an impressed counter.

Eyeletting: The finishing of holes with small metal tubes. Eyelets are furnished with one end flanged. Space must be left so that flange will not cover any type matter. If eyeletted subjects are to be packed eventually in individual envelopes, eyeletter should insert them at once, otherwise interleaving with heavy slip-sheets is called for to save cards from being damaged by impressions of eyelets in adjacent cards.

Flocking: A comparatively new process for producing a suede-like surface. An adhesive sizing is printed and suede material in powdered form is sprayed or dusted on while sizing is still tacky. A variety of colors, textures, and thicknesses of coating is available.

Foliating: Similar to laminating (See Cross-Reference Index). Printed matter is combined with a nonbrittle acetate transparent film, using a plastic adhesive that is not water soluble. Freedom from peeling at edges is claimed.

Gumming: Stock not customarily gummed may be done so to order. Sheets can be gummed after printing to eliminate problems incident to printing gummed stock. Trade plants are equipped for automatic strip-gumming in either direction, any number of strips, any width; some can spot-gum. Small runs, envelope flaps, and special shapes often are hand-gummed. Strip-gumming of large sheets may distort them so that hand-gumming after diecutting often is preferable when accuracy of register is a factor.

High diecutting: A process used almost exclusively for labels. Die, which is hollow like a cookie cutter, is set in position by eye on a carefully jogged pile, one-half to one inch thick, of printed sheets. After press forces die through the pile, the labels remain in the die and are slipped out by hand. Labels may be printed in multiples several up on a sheet. Margins should be generous, with at least one-eighth inch of bleed color allowed for possible inaccuracy in cutting. Both steel rule and high diecutters should be consulted to ascertain which

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process is the more suitable and practical for the specific job that must be done.

Hingeing: The attaching of two panels by a cloth or paper strip; panels may be folded to face or back each other. They may be individual boards or a single scored board. An invisible hinge is achieved by pasting hinge or reinforcing strip onto board before the face sheet is mounted thereon.

Label cutting: Multiple sheets of labels that are to be guillotine cut require extra care in imposition so that they will line up perfectly. Crop marks help. Bleed should be allowed where color comes to the edge, and borders should be generous. Hairline accuracy should not be expected in cutting.

Labeling: Main body of a display may be printed by one process and label illustration by another. Guide marks should be printed for pasting the labels, with ink omitted from area to be covered by label since it might show through or affect its adhesiveness. Labels pasted on solid are preferred but they can be tipped on.

Leafing: Brass engraved stamp is used. Stamping die first prints a sizing, which acts as an adhesive between stock and metal—gold, silver, bronze—leaf. The leaf is fed from a roll, being interposed between stock and stamp. Considerable heat and pressure are required. After stamping, the small leaf particles that cling to design edges are cleaned off.

Metal edging: Calendars, hangers, maps, wall charts are bound at top by metal slides. Hanging loop is bound in with the sheets. Single sheets often are bound at bottom, too. Extra margin of about three-eighths inch much be allowed for folding stock with slide in binding. Sheets up to 60 inches wide can be so edged. Many colors available.

Numbering: Numbering machines are locked in chase either with or without other type matter. They can number backward or forward, consecutive or repeat, and use either hand or foot power. When used with type, enough room must be provided in type form. Subsequent operations should be checked carefully to avoid reversing order of numbers.

Paneling: Announcement cards, jewelry cards, photomounts often are paneled by hot embossing process; some stocks also may be paneled cold. A paneled effect may be simulated by using a creasing rule. A panel sometimes is hot-pressed on rough finished stock to provide a smooth surface for halftone or other fine printing.

Pebbling: A method of imparting antique, egg-shell, or other fancy finish on thin stock. Sheets are run through pebbling rollers after printing; this eliminates many of the problems of producing fine printing on rough stock.

Perforating: Perforating rule may be included with printing or diecutting form. Tooth spacing should be selected according to the stock and its ultimate use—snap-out, replay cards, etc. Postage stamp type of perforating is done by bookbinder using rotary machine.

Pinking: Swatches of woven material are pinked—cut with serrated edge—instead of straight cut to minimize tendency to unravel. Sample card makers are equipped with pinking knives for their guillotine cutters to produce a uniform zig-zag cut. For samples and small runs, the swatches may be cut by hand with regular pinking shears.

Punching: For loose-leaf, mechanical binding, punching is done with stock male and female dies on bookbinder's punches. Some paper for industrial use is punched on presses of type used by metal stampers. Any size or shape hole can be punched by steel rule die process, often in combination with other operations described herein.

Reinforcing: Also called hingeing (see above). Judicious use of pasted reinforcement sometimes will effect tremendous saving in material thickness and shipping weight, rather than make entire subject strong enough for stress or abuse to which one small portion is to be subjected. Paper, cloth, or acetate patches can be used to reinforce holes. In metal, round, oval, and many other shapes of eyelets and grommets, corner reinforcements, inserts, stays, and wires are available.

Scoring: Most stocks to be folded require scoring. Heavy cardboard must be cut-scored—cut part-way through the board on outside of fold. Successful creasing means a well rounded crease with no cracking of stock when folded; involves careful selection of stock, the shape and thickness of creasing rule, and skillful makeready. Creasing of printed surface presents problems; care should be taken that crease or score does not fall on a line of the reading matter.

Snap fasteners: Require a hole punched in stock for each member. Available in many combinations to suit almost any material and use that may be desired.

Stitching: War and post-war shortages, in addition to poor quality of wire, have led to wide elimination of stitching in favor of pasting or additional folds. Stitching is superior for some display work, as attaching products to cards.

Stringing: Used on merchandise tags, hanging signs, directories, calendars, etc. A hole must be punched first. While some stringing is done by hand, automatic and semi-automatic machines also are available. Length of loop, type and color of string, and whether single or double hole should be specified. Sometimes hanging hole is sufficient. Slit-hole combination locking onto button of garment can eliminate stringing.

Swatching: The attaching of samples of material to sample cards or other advertising matter. Major portion of sample is not adhered to card, thus enabling quality, texture, etc., of material to be felt between the fingers. Material is pinked to prevent unraveling.

Tabbing: Standard file and guide cards can be tabbed singly on tab cutting machines. Steel rule diecutting permits scoring, punching, trimming, etc., in same operation with tabbing. Any shape or arrangement of tabs, including staggering or interlocking if size of stock so dictates, can be produced. It is important to provide trim where round corners are stipulated in the order.

Texturing: The printing and embossing of paper so expertly as to actually reproduce the texture and appearance of woven materials and other products. Also includes the treating of surface of a display to imitate brush marks of oil paintings, weave of canvas, etc., by rotary or flat embossing.

Tubing: Mailing tube should be long enough and strong enough so that if contents shift or tube is damaged, there still is adequate protection. Diameter should be sufficient to facilitate both insertion of material and its return to normal flatness when removed from tube.

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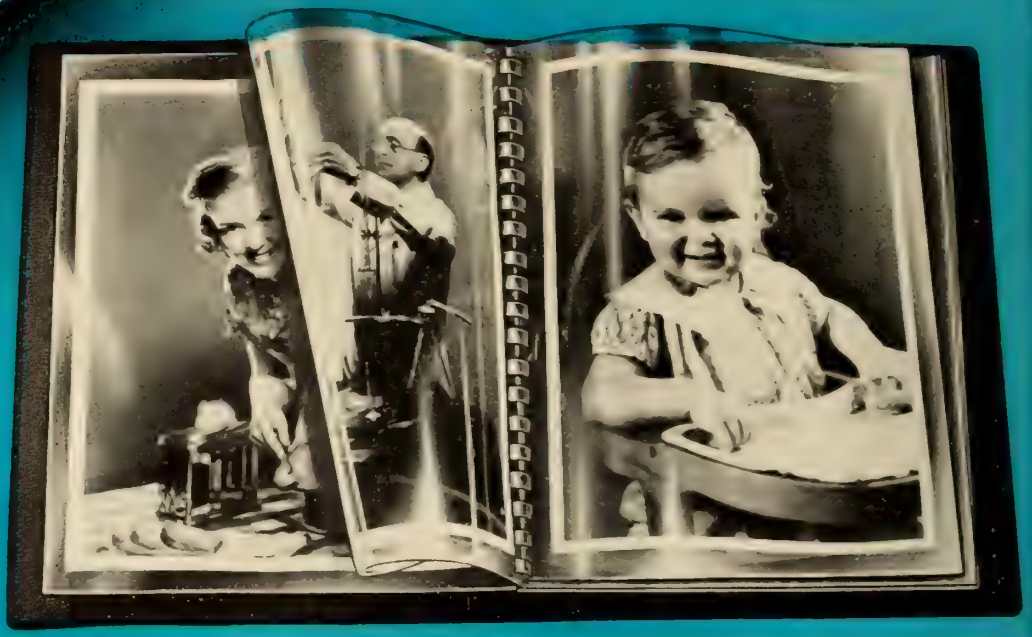


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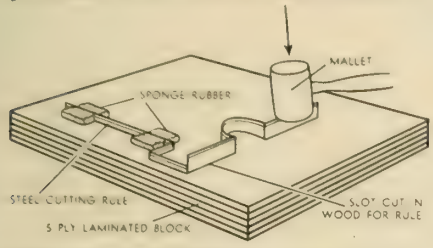
Diecutting and mounting

Methods of preparation, manufacture, and finishing of the displays that carry the advertiser's message directly to the point of consumer sale

David Lansky

How can the advertiser or his agency get the most out of every dollar spent for displays?

It is imperative, first, that he have at least a broad working knowledge of the processes involved in the manufacture of displays. In addition, he must establish routines of working that will insure a practical successful display planned to tie in with other advertising at the proper time, without having to make rash and disrupting requests of his suppliers.



Steel rule diemaking: The copy is hand cut.

Proper timing insures better quality displays and obviates extra overtime charges that usually accompany overnight deliveries. In the present market, it takes four to six weeks to get mill delivery of cardboard for a display.

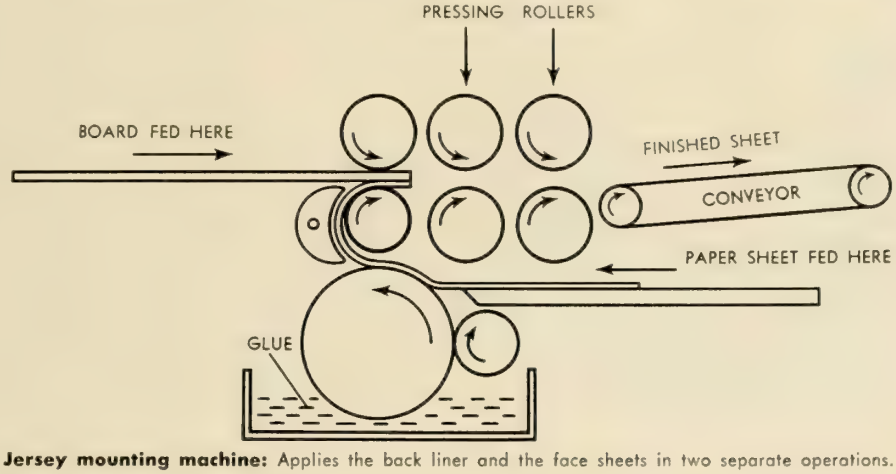
Making a display

When lithographed sheets come in to a finisher, the sheet goes through the following operations before a finished display is produced:

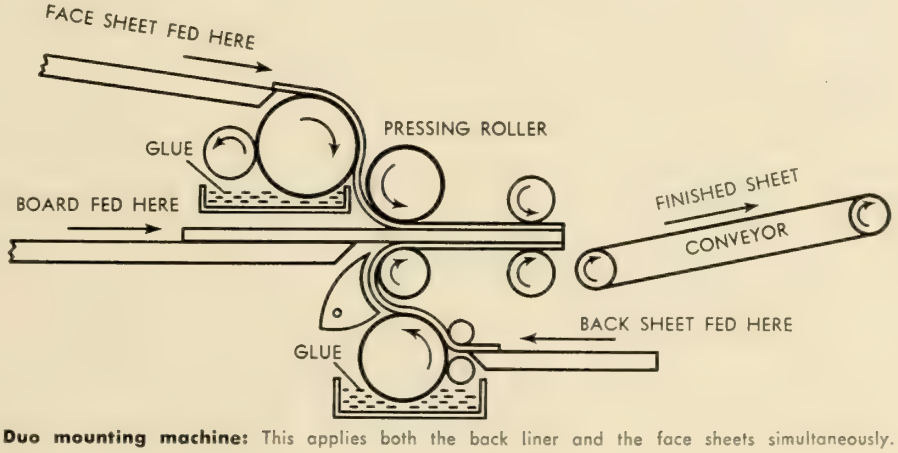
1. A steel rule die is made from the lithographed and varnished sheet.
2. Sheets are mounted on cardboard.
3. Hydraulic pressure is then applied to mounted sheet; where sheets or cardboard are in poor condition, they are conditioned to make them mountable.
4. The die is prepared on a press with heavy areas leveled off so that the full pressure applied by the diecutting machine is uniformly spread over the die. Counters are applied on press plates for any creases that may be required on the display. This operation is commonly called "makeready."
5. Sheets are diecut using the original guides set by the lithographer. Where such guides have been tampered with or cut away, color guides are used.
6. The waste that is present between the knives on the die is pulled away from the finished sheet and any blemishes on the edge of the display scraped off. This is known as "stripping."
7. Easels are applied to the displays, in addition to which any other finishing operation such as special glueing, scorebreakings, stitching, eyeletting, etc., are applied.
8. The displays are slip-sheeted and examined carefully before packing.
9. The displays are packed ready for shipment either in corrugated folders, cartons, cases, or are strapped in bulk on skids for distribution from another point.

Assuming that each operation takes a day, on a small-run job, a minimum of a week to ten days are required for the production of the average run of displays. This also presumes that a job will be put into work as soon as it enters the plant. A knowledge of factory procedure precludes the possibility of this happening in every case.

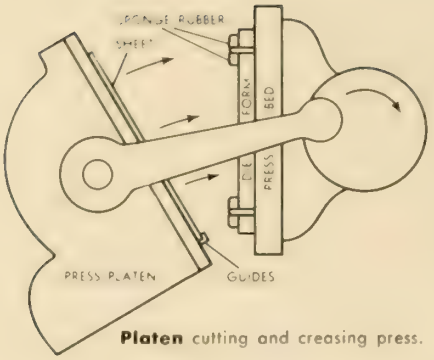
Factory schedules are made to coordinate the activities of both personnel and machines so that every element involved operates to the maximum effi-



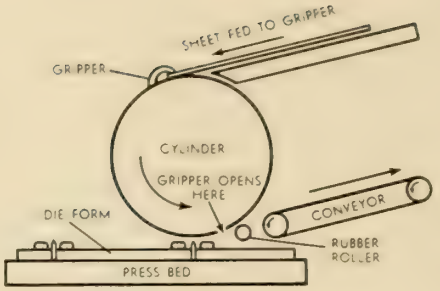
Jersey mounting machine: Applies the back liner and the face sheets in two separate operations.



Duo mounting machine: This applies both the back liner and the face sheets simultaneously.



Platen cutting and creasing press.



Cylinder cutting and creasing press (see above).

ciency; thus, some jobs are not started directly after the preceding operation is completed.

From this description, it can be seen that the buyer of displays must allocate at least eight to 10 weeks for the finishing of the average display. The time it takes for the lithographing may be discounted from the period of time it takes for the cardboard material to arrive. Any request for delivery that overlooks these factors is reflected in both the price and the quality of the display produced under such conditions.

Specifications

The buyer first selects the art work he expects to reproduce from the visuals submitted to him. Specifications then should be set for the finishing of the display. When the display is flat (not three-dimensional) he need only decide on thickness of stock, size of easel, and method of packing for his distributional means.

If the display requires constructional planning, a sample submitted through a printer or lithographer dealing with a competent finisher furnishes the requisites of specifications.

The criterion determining thickness of stock is: Will the display stand up without untoward curling or warping? Material may run as high as 50 per cent of the total cost of the display, and therefore the most should be gotten from the thinnest sheet of board possible.

For standardization purposes, the thicknesses available are .040. .055. .065. .075 inches. The board used to attain these finished thicknesses is usually ten points lighter, inasmuch as the printed sheets, the back liner, and the glues involved provide the bulk of the remaining ten points.

One point equals one-thousand of an inch. Point measurement is often confused with the ply measurement used for coated blanks. Therefore, a comparative table of ply measurements and points of thousandths of an inch is given; fractional equivalents are interspersed to help visualize thickness indicated:

2 ply	.012"	
3 ply	.015"	1/64"
4 ply	.018"	
6 ply	.024"	
8 ply	.030"	
	.031"	1/32"
10 ply	.036"	
	.040"	1/25"
12 ply	.042"	
14 ply	.048"	
	.055"	1/20+"
18 ply	.060"	
	.062"	1/16"
	.065"	1/15+"
24 ply	.075"	1/13+"
	.100"	1/10"
	.125"	1/8"
	.187"	3/16"
	.250"	1/4"

.040—counter merchandisers and small cards up to 12 x 14"
.055—counter cards not larger than 14 x 18"
.065—floor stands and window displays not larger than 24 x 36"
.075—window displays larger than 24 x 36"

On displays with multiple scores, lighter board can be used satisfactorily because the scores make the board more rigid and tend to eliminate warpage. For this reason, when budget trouble is encountered, the finisher should be asked to submit a sample on the lightest possible board with the aid of scored turnbacks and strut reinforcement.

For small runs, stock sizes usually carried in the above thicknesses are:

26 x38	34 x 47	44 x 64
29 x 45	39 x 52	

Easels should be from two-thirds to three-fourths the size of the display. A short grain display should have the easel up to the top of the card. When bulk packaging is specified, cartons are planned not to exceed a weight of 60 pounds per carton. It must be borne in mind, however, that all displays are not the same. Thus, extra protection must be provided for displays with jagged edges or with sharp points by not stripping the waste surrounding such area, or by means of corrugated buffers or cushions.

Diecutting presses

Diecutting is done on various presses, depending on the size of the sheet and intensity of pressure required to cut the finished product. The standard sizes of presses are:

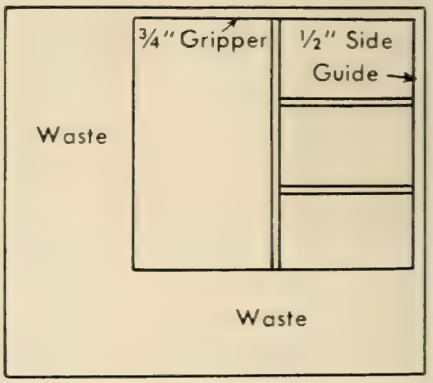
14 x 22"	27 x 41"
20 x 30"	46 x 67"

Only a few mounters are equipped with the oversize 50 x 80" press to accommodate the sheets produced by the latest lithographic presses.

Paper used for jobs to be mounted should be at least 70 pound litho coated or offset and should be thoroughly dry before being sent to the finisher.

Generally speaking, printing and litho plates are far more expensive than dies, and the economics of those industries should determine the size of sheet used. Where dies are intricate, the finisher should be consulted for layout so that provision may be made for splitting the sheet to a size more consistent with the cost of dies and the size of run. Margins must be adequate for each section of the sheet to be diecut.

All sheets require three-quarter inch gripper, one-half inch side guide and one-half inch on opposite ends of guides. If for any reason this is not feasible, the finisher should be consulted and should make the final decision as to gripper, side guide, and opposite guide sides. Even if larger paper is used, these margins should never vary. As mentioned previously, mounters use the original guides of the printer, and if the margins are larger much material is



Guide margins: Waste should be on off ends.



★ CREATORS ★ DESIGNERS ★ MANUFACTURERS

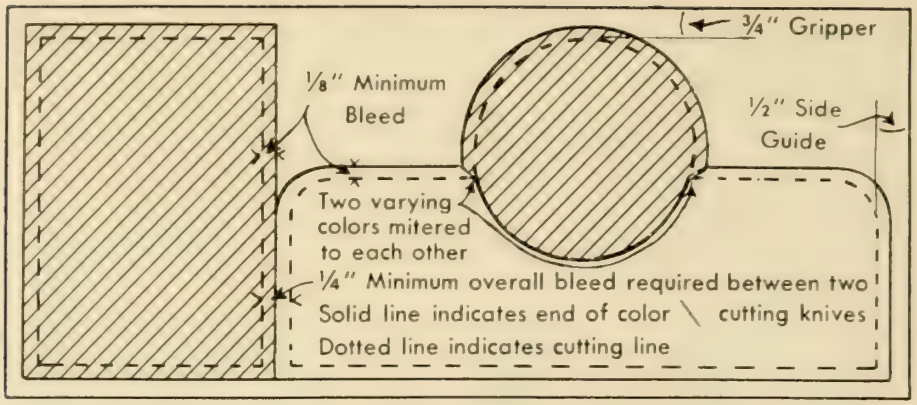
MOTION DISPLAYS	Heat Rotors • Flasher • Flash-a-Motion • Third Dimensional Dioramas
BUBBLE DISPLAYS	Name or Message in Continuously Rising Bubbles and other effects.
PLASTIC DISPLAYS	Original Applications in Fabricating, Laminating and Printing.
CARDBOARD DISPLAYS	Superior Reproductions in Silk Screen, Photo-Gelatin and Lithography.
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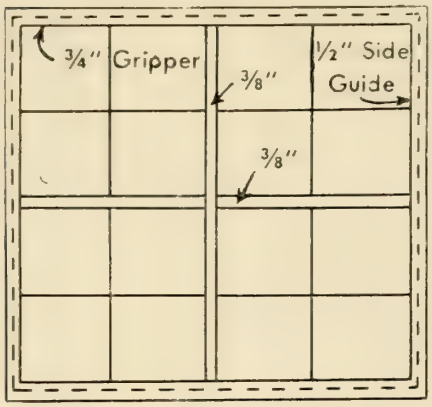
SINCE HAYDEN POINT OF PURCHASE ADVERTISING 1893

E. J. HAYDEN & COMPANY, INC.

118 East 25th Street, New York 10, N. Y. • GRamercy 3-4031



Proper bleeding: One-quarter inch minimum is required to avoid hairline register in diecutting.



Single knife cutting: On square cut displays.

wasted and, in many cases, stock ordered for a job is rendered useless. All waste should be left to the side of the sheet opposite the guides so that this waste can be cut away before mounting.

A color bleed of at least ⅛" around each diecut piece (¼" between two units) is necessary to maintain register to allow for tolerance in variations. Where bleed colors come together, they should be mitered, coming to a point at the cutting line where the colors meet. For economy purposes on a tight layout, two subjects can be laid together without bleed if the single knife is separating 2 cards having the same color.

If a whole sheet has cards of this nature, then a single knife can be used throughout except that in the center of the sheet, both vertically and horizontally, ⅜" of bleed should be allowed running to both ends of sheets so that the subjects will not fall apart in the press when diecut.

Where color is not distributed uniformly on a sheet, white areas should be filled in with a solid color to avoid a wavy condition of the sheet that might cause difficulties in the mounting. When special glueing is required on the display, the ink should be kept off the surface where the glue will be applied.

Other precautionary measures for layouts are: Bleed must always be the same color as the color it bleeds; cutting marks never should be printed; diecutting on the edge of two different colors should be avoided; and if a large sheet is used, the working area never should be spread, but rather should be condensed as much as found to be possible.

Basic terms described

For a better understanding of the nature of mounting and finishing, some basic definitions may be helpful.

Mounting and diecutting are essentially auxiliary services to the Graphic Arts trades for the production of advertising displays.

The function of the industry is to give rigidity to printed and lithographic sheets by supplementing the light-weight papers used in these processes with cardboard, utilizing glue as the medium of combining the two materials.

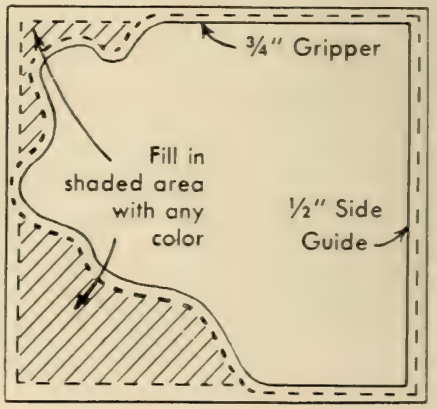
The prime purpose of this service is to give the advertising reproductions the physical thickness and strength that will enable retail stores to stand such displays on their counters and their store windows firmly and securely.

Here the consumer receives the advertiser's message at the most vital point in the distribution of a product—where the consumer makes the decision that will justify all previous monies spent by the advertiser in the other media to educate the public to buy his product, rather than that of his competitor's.

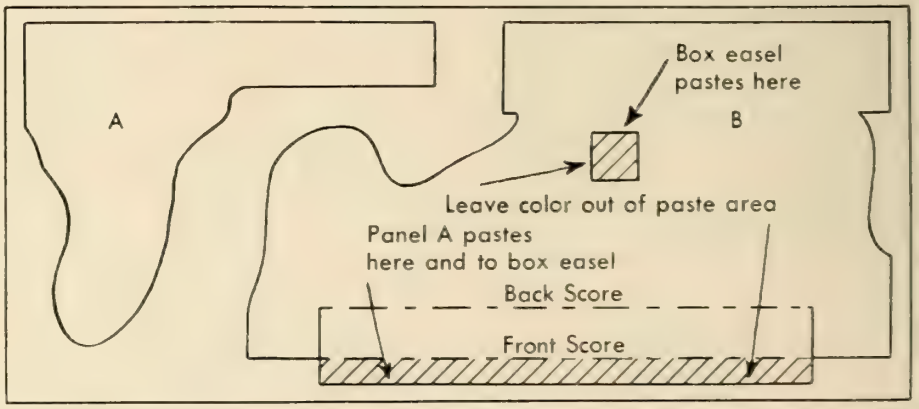
In addition to converting the paper and reproduction to a cardboard display, the mounter gives shape, dimension, and realism to further the attention-getting value of the display. He does this by diecutting the mounted sheet into the shape most attractive to embellish the art work and by the application of three-dimensional principles and/or the affixing of real products to the display.

Because of the inherent properties of paper and cardboard for absorbing moisture, and since glue is soluble in water, stretching and shrinking is inevitable. Warpage is merely a term describing the result of such dimensional distortion, owing to the absorbing of moisture from the atmosphere and then the drying out under other atmospheric conditions.

The mounter limits the possibility of



To keep sheets flat: Use a solid color in blank.



Noncolor areas: Color should be omitted on the sheet where the glue or paste is to be applied.



Let us do the

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(INCLUDING PUNCHING)

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We also manufacture printed and die cut tags, strung, complete, ready for use.

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MODERN FACTORY AT:

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BET. B'WAY & LAFAYETTE ST. WO 2-3296

COPYRIGHT 1946, STANDARD TAG CO.

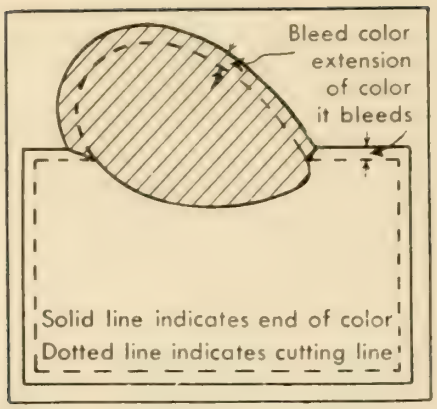
TAG CONVERTING from your plain or printed stock

YOUR STOCK

CORNER CUTTING

PATCHING AND BRASS EYELETTING

STRINGING AND WIRING



Care on color: Use same one as color it bleeds.

warpage by careful attention to the grains of the board, the lithograph sheet, and back-liner so that shrinkage is in one direction only in the drying process, and can then be controlled. The lithographer can help this process by laying out his sheet so that the largest dimension of all displays are run in one direction, in the length of the sheet, inasmuch as most paper used is long-grain.

Glues are selected according to the paper used and in conformance with the atmospheric condition prevalent in the season of the production of the display.

Adequate drying time is allowed between the operations of mounting, diecutting and finishing for the best results. Before finishing, samples of the job are set up, and, if warpage still persists, the grain of the board is broken (dewarped) or additional struts are added to support and straighten out the warped display.

The planning of a display does not end with its reproduction; it begins there. When the display is doing its work in the retail store—attracting buyers—only then can it be said that the job is finished.

The greatest bugaboo of the finishing industry and the most costly error is made in poorly planned distribution. Displays are bulky by nature and take up a tremendous area of space, especially when packed in corrugated folders and cartons.

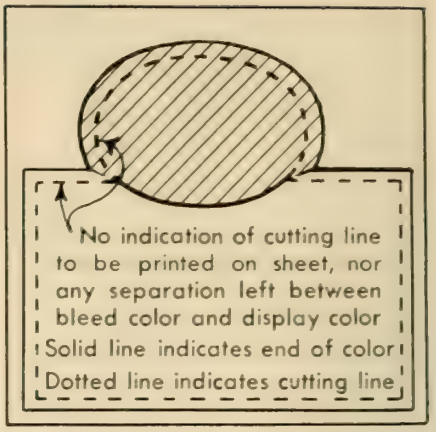
It is imperative, therefore, that shipping instructions be available before the job is ready to be shipped by the finisher. If this cannot possibly be planned, the displays probably will be sent to a storage warehouse, involving unwarranted additional expenses. Otherwise, the advertiser takes it upon himself to do the distribution, thus causing double handling of the bulky displays.

The finisher cannot possibly store large portions of the many millions of displays he produces, and if he did he couldn't possibly figure enough for the valuable space consumed by storaged merchandise.

The cost of handling can be kept down by planning distribution early enough so that a list is available for the finisher before production is completed. Finishers are set up to route and ship via the fastest and most economical way—rail freight, motor freight, express or parcel post, or air mail.

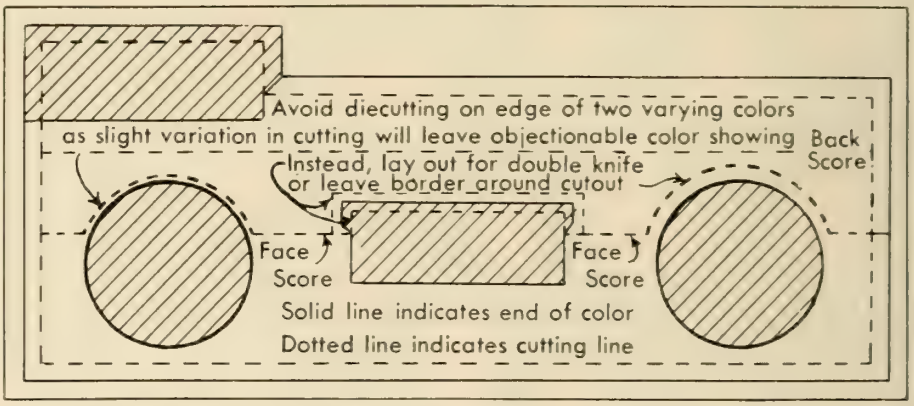
If distributive sources are planned before production of a display, clerical work involving labels, bills of lading, express or parcel post receipts can be provided for. The shipping department also keeps posted on all changes in tariffs and classifications. The advertiser is kept informed of progress of shipments through daily itemized shipping reports.

A study of the suggestions contained in this article discloses the fact that the buying of mounting and finishing service requires a background of experience. Whenever there is uncertainty on the part of the buyer, it is to his best advantage to obtain guidance from the finisher with whom he deals. Neglect of details in planning means wasted dollars for the finisher, the advertiser, or both.

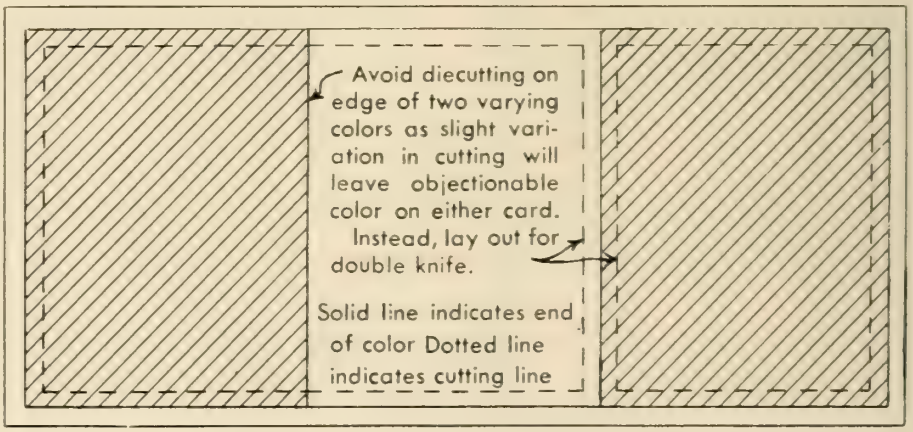


Outlines: Should be put on sample sheets only.

Informed buyers with a technical know-how have placed the manufacturer of displays on a solid footing and have helped eliminate the guesswork that plagued the industry in its early years. There is no reason why the process of technical advancement cannot be continued so that the buying of displays will be no more complicated a problem than the placing of advertising space in newspapers or magazines.



Varying colors: Where two colors adjoin, use double knife so unwanted color won't be left on either.



Another caution on varying colors: Border can be left on cutout to avoid showing unwanted color.

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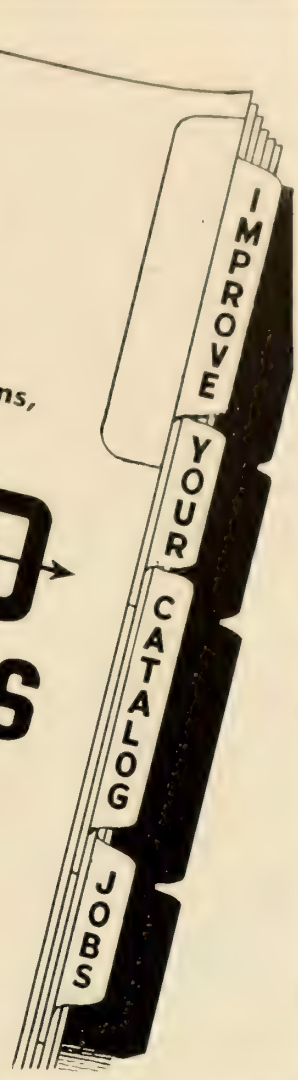
Quality and Quantity in Production

117 WEST 17th STREET

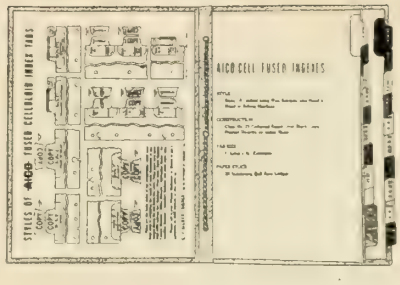
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Protective and gloss coatings

Production hints concerning the use of lacquers, spirit and overprint varnish, nonscratch varnish, paraffin, laminating, and such plastics as vinyl

Edward I. Shavitz

There has been an interesting trend in the coating field. Packaging and advertising display engineers are more conscious of protection for their products while they are in transit, on display, or in the consumer's possession. Protective coatings have been used for many years but improvements since the war have been many and varied.

In addition to protection, coatings create lusters—from slight to brilliant, depending upon the type used—to enhance the appearance, "bring up" dull or poorly reproduced colors, and enrich the printed piece.

To obtain maximum protection and the most desirable luster, hard finished papers such as litho coated paper and clay coated board, both of varnish quality, should be used. Inks should be of the type that will not run or bleed when coatings are applied and should be lightproof if intended for outdoor or window display. For the correct types, paper and ink suppliers and trade finishers are the best sources of information.

Varnish a vital item

Overprint varnishes are applied on offset or letterpress, using standard equipment. The viscosity of the varnish and the thickness of the film desired determine the fountain setting. The advantage of this type of varnishing is that any position on the sheet can be "spotted" or highlighted without having to cover the entire surface—the same as printing another color. The one great disadvantage is the difficulty in drying sheets. To avoid tacking, blocking, or offsetting, sheets must not be stacked high and must be "winded" frequently. Production is, therefore, necessarily rather on the slow side.

Of all coatings, spirit varnish is the most widely used. It is comparatively inexpensive, produces an excellent luster and sufficient protection for most printed material. The best type is made with copal—an East Indies resin—as its base and denatured alcohol as the solvent. Spirit varnish is applied by the roller coating method, after which the sheets are conveyed through a long drying oven to evaporate the alcohol.

During the war, substitutes were used for copal, but now that it is available again, it is suggested that it be specified in ordering. The large can companies specify "resin-free varnish on labels," into which category copal falls. It also minimizes the mounter's problems.

A spirit varnish type of coating in the copal price range is now available for heat sealing purposes, as is a low-cost alcohol resistant varnish, suitable primarily for liquor labels. Both of these varnishes produce high lusters.

Non-scratch varnish

Non-scratch or scuff-proof varnish has been widely used for some years but came into its own during the war when metal was not available for such tubular packaging as lipsticks; dusting, shaving, tooth, face, and baby powders; flashlight batteries, etc. Board was, and to a considerable extent still is, substituted for metal.

To give the container a finished appearance, the ends are spun or crimped. Ordinary coatings will not withstand the friction or temperatures created by this spinning process but nonscratch varnish will.

As the name implies, this varnish protects all types of packaging and other printed matter against marring, scuffing, scratching, powdering caused by friction or rubbing, and rough handling. Since large, complicated window displays require careful handling, nonscratch varnish is now used extensively on them for protective purposes.

The role of lacquers

Lacquers are used principally for protection and can be formulated for many purposes, including protection against alcohol, grease, oil, water, or moisture penetration, etc. They are more expensive than spirit varnishes and, because they do not usually produce lusters as brilliant, they are not recommended for such use, except when luster is secondary to the protection features desired.

Emergence of plastics

Plastics are the newest and most practical of all coatings, with vinyl leading the way. It imparts a brilliant luster, is smooth to the touch, and is excellent protection against alkalis, mild acids, grease and oils, alcohol, food products, water, moisture penetration, scuffing, and other damaging factors.

It is water white, pliable, heat sealing, and is extremely popular in the carton and label field and on material of a semi-permanent nature, or that is subject to much handling, such as catalogs, book jackets, blotters, place mats, and a variety of other items.

Versatility of vinyl

The main advantage of vinyl over varnishes or lacquers is that it will protect against many disintegrating forces at the same time, whereas the other coatings will protect against only one or two in a given formulation.

Unless otherwise stated, spirit varnishes, lacquers, and plastics are applied in the same manner. Production speed and drying oven temperatures depend upon the volatility of the solvents.

Laminating

Laminating, the process of applying a sheet of plastic film or acetate to a printed sheet, seems to be making some progress. Clear, transparent adhesives are used to fuse the two sheets, and the result is one of beauty and utility. Unfortunately the process is still in the luxury class. It is advisable to trust jobs of this type to experienced, established firms and consult them regarding paper and inks to be used.

Paraffining is used as a water or moisture repellent. It is applied by the roller coating or dipping method and leaves a dull wax finish on the final surface.

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Henley's 20th Century Book of Formulas, Processes & Trade Secrets. 1945 ed., $4., 886pp., ed. by Gardner D. Hiscox & T. O'Connor Sloane; Am. Photo. Pub. Co., Boston.

History of Color Photography. 1944, $10., J. S. Friedman; Am. Photo. Pub. Co., Boston.

History of Photography. 1945, $10., J. M. Eden; Columbia University Press, New York.

Illustrative Photography in Advertising. 1929, L. A. Williams; Camera Craft Pub. Co., San Francisco, California.

Kodachrome & How to Use It. 1940. $4., Ivan Dmitri; Simon & Schuster, New York.

Kodak Reference Book. 1946, $2.75; Eastman, Rochester, N. Y.

Leica Manual. 1942, $4.; Morgan & Lester, New York City.

Lighting Ideas in Photography. 1940, $2.75; William Herschaft & Jacob Deschin; McGraw-Hill, New York.

Making Your Photographs Effective. 1940, J. A. Lucas & Beverley Dudley; McGraw-Hill, New York City.

Natural Color Processes. 1940, $2., Carlton E. Dunn; Am. Photo. Pub. Co., Boston.

New Ways in Photography. 1940, $2.75, Jacob Deschin; McGraw-Hill, New York.

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See The Garraway Company advertisement in Art & Photography Section, page 77



Photographic Chemicals & Solutions. 1939, $4., J. L. Lather & G. E. Matthews; Am. Photo. Pub. Co., Boston.

Photographic Emulsions. 1937, E. J. Wall; Am. Photo. Pub. Co., Boston.

Photographic Facts & Formulas. 1940, E. J. Wall; Am. Photo. Pub. Co., Boston.

The Photographic Process. 1940, $5., J. E. Mack & M. J. Martin; McGraw-Hill, New York.

Photographing in Color. 1940, $4.85, Paul Outerbridge; Random House, New York.

Photography. rev., 1945, $5., C. E. K. Mees; Macmillan, New York.

Photography for Commerce. 1940, Walter Nurmberg; Studio Pub., New York.

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Photography: Its Principles & Practice. 1938, C. B. Neblette; Van Nostrand, New York.

Photography: Theory & Practice. 1940, $10., L. P. Clerc; Am. Photo. Pub. Co., Boston.

Photomicrography. 1946, $2., Eastman, Rochester.

Retouching & Finishing for Photographers. 1943, $2.25, J. S. Adamson; Pitman, New York.

Theory of the Photographic Process. 1942, $12., C. E. K. Mees; Macmillan, New York.

Science & Technique of Advertising Photography. 1945, $3.50, 96pp., Walter Nurnberg; Studio Publ., New York.

Universal Photo Almanac. 1947, $1.50; ed. by Augustus Wolfman; Am. Photo. Pub. Co., Boston.

Use of Photography in Layout. 1945, $1., F. Kraus; House of Little Books, New York.

Wratten Light Filters, 50c; Kodak Data Book on Filters & Pola-Screens, 25c; Eastman, Rochester.

Layout and design

Advertising Design. 1947, M. Price; McGraw-Hill, New York.

Advertising Layout. 1946, $4., 96pp., Richard S. Chenault; Heck-Cattell, New York.

Advertising Layout. 1936, 4v., $30.; W. H. Badke, Milwaukee.

Advertising Layout & Mediums. 1938, $1.45, 117pp., Charles Ellison; Inter. Textbook, Scranton, Pa.

Advertising Layout & Typography. 1940, $3., 133pp., Eugene de Lopatecki; Ronald Press, New York City.

Commercial Art & Design. 1931, $3.50, J. R. Matasek; Gruce, St. Paul.

Copy Technique in Advertising. 1945, $4., Richard Surrey; McGraw-Hill, New York.

Design & Decoration. 1940, $4., 64pp., Paul Carlyle, Guy Oring, H. S. Richland; McGraw-Hill, New York.

Design: The New Grammar of Advertising. 1940, James A. Mangan; Dartnell Publications, Chicago, Illinois.

Design This Day. 1940, Walter Dorwin Teague; Harcourt Brace, New York.

Grafika: Modern Design for Advertising and Printing. $8.50, 120pp. Imre Reiner; Struck Pub. Co., 415 Lexington Ave., New York 17.

101 Roughs. 1942, $3., 112pp., Don May; Drake, cago, Illinois.

Layouts & Letterheads. 1940, $6., 152pp., Paul Carlyle, Guy Oring & H. S. Richland; McGraw-Hill, New York.

Layout in Advertising. 1928, $4., W. A. Dwiggins, Harper, New York.

Printing Design & Layout. 1934, $10., V. Steer; Musson Book Co., Toronto.

Reading as a Visual Task. 1942, $5., Frank K. Moss & Matthew Luckiesh; Van Nostrand, New York City.

The New Vision. 1946, L. Moholy-Nagy; Wittenborn, New York.

Illustration and art work

ADCC Record of Advertising Art. $6., Art Directors Club of Chicago; Kroch, Chicago.

Annuals of Advertising Art. $6.50, ($6. a vol., prior to 1945), Art Directors Club of New York; Watson-Guptill, New York.

Commercial Art. 1940, $3., C. E. Wallace; McGraw-Hill, New York.

Drawing for Advertising. 1943, $1.90, James Gardner & V. Sharpe, London; Macmillan, New York City.

Drawing for Process Reproduction. 1940, $3.20, C. J. Hayes & E. L. Koller; Inter. Textbook, Scranton, Pa.

Early American Advertising Art. 1943, $1.50, C. W. Drepperd; Paul A. Struck, New York.

Essentials of Creative Design. 1946, Garside Powers; House of Little Books, New York.

Fashion Illustration. 1940, $5., 279pp., C. Schmuck & V. Jewel; Whittlesey House, New York City.

40 Illustrators & How They Work. 1946, $10., 332pp., Ernest W. Watson; Watson-Guptill, New York City.

Handbook of Early American Advertising Art. 1947, $6.50, 224pp., Clarence P. Hornung; Dover Publications, New York.

Introduction to Advertising Illustration. 1929, $4., G. C. Aymar; Harper, New York.

Line Drawing for Reproduction. 1941, $3.50, Ashley Havinden; Studio Publications, New York.

Modern Art in Advertising. 1947, $7.50, 120pp., 39pl., Container Corp. of America; Theobold, Chicago.

Modern Illustrations. 1929, $2., E. C. Matthews; Drake, Chicago.

Scientific Illustration. 1945, $4., John L. Ridgway; Stanford Univ. Press, Palo Alto, Calif.

Thoughts on Design. 1946, $7.50, Paul Rand; Wittenborn, New York.

Work for Artists. 1947, $3., 194pp., ed. by Elizabeth McCausland; American Artists Group, Inc., New York.

Lettering and type design

Alphabets and Elements of Lettering. 1942, $6., Frederic W. Goudy; Univ. of California Press, Berkeley, Calif.

An Alphabet Source Book. 1947, $3.95, 199pp., Oscar Ogg; revised from 1940 Harper edition; Dover, New York.

American Alphabets. 1930, Paul Hollister; Harper, New York.

American Type Design in the Twentieth Century. 1924, D. C. McMurtrie; Ballou, Chicago.

Book of Printed Alphabets. 1946, 7s 6d., D. Thomas; Sidgwick & Jackson, London.

Anatomy of Lettering. 1935, Warren Chappel; Loring & Mussey, New York.

Bibli-Typographica: A Survey of Contemporary Fine Printing Style. 1930, Paul Johnson; Covici, Friede, New York.

Book of American Types. $2.; American Type Founders, Elizabeth, N. J.

Graphic Arts ABC, vol. 1: Square Serif. 1946, $5., Dan Smith; Kroch, Chicago.

Lettering from A to Z. 1946, $5., 153pp., Clarence P. Hornung. intro. by F. W. Goudy; Ziff-Davis, New York.

Letters & Lettering. 1943, $4.50, 159pp., Paul Carlyle & Guy Oring; McGraw-Hill, New York.

Making Printer's Type Faces. 1939, $2.50; R. H. Middleton; Black Cat Press, Evanston, Ill.

New Book Faces (pamphlet). 1947; Lanston Monotype Machine Co., Philadelphia.

Old-Fashioned Type Book. 1945, $5., F. N. Phillips; Phillips, Inc., New York.

Type for Books and Advertising. 1947, $6., 199pp., Eugene M. Ettenberg; Van Nostrand, New York.

Type Design, Past & Present. 1926, Stanley Morison; Fleuron Press, London.

Typologia. 1940, $4.50, 171pp., Frederic W. Goudy; Univ. of California Press, Berkeley, Calif.

Writing & Illuminating, and Lettering. 1929, Edward Johnson; Pitman, London.

Color

Color in Advertising. 1936, $5., J. Binder, Studio Publications, New York.

Color Chemistry; Color as Light; Color in Use, (monographs). 1935, $10.; International Printing Ink Div., Interchemical Corp., New York.

Color & Design in the Decorative Arts. 1935, $5., E. Burris-Meyer; Prentice Hall, New York.

Color in Display. 1938, $2., 572pp., Quentin Crisp; Blandford Press, London; Chemical Pub. Co., Brooklyn.

Color Harmony Manual—Large Clip Edition. 1946, $125.; Color Laboratories Div., Container Corp. of America, Chicago.

Color Harmony Spectrum. 1945, $1.50, Avenir Le Heart; Am. Photo. Pub. Co., Boston.

Dictionary of Color. 1930, $14., 207pp., A. Maerz & M. Rea Paul; McGraw-Hill, New York.

Earhart Color Plan (charts). 1947, $4., Graphic Arts, Chicago.

Monument to Color. 1938, $5., F. Birren; McFarlane, Warde, McFarlane, Rochester.

Munsell Book of Color. 2v., $150., pocket ed., $48.; Munsell Color Co., Baltimore.

Printers Art of Color. 1944, $1.50, F. Birren; Crimson Press, Westport, Conn.

Reproduction Manual. 1944, and supp'l, $5.; Multi-color Co., Detroit.

Selling with Color. 1945, $2.75, 244pp., Faber Birren; McGraw-Hill, New York.

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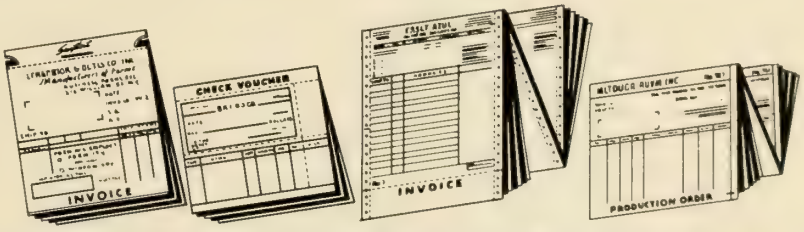


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Copy preparation, proofreading

The Complete Desk Book. 1939, C. O. S. Mawson & John Robson Crowell, New York

Compounding in the English Language. 1939, Alice Morton Ball; H. W. Wilson Co., New York.

Copy Preparation. 1927, rev., Arnold Levitas; Roy Press, New York.

Dictionary of Printing Terms. 4th ed., 1941, $1.75, R. T. Porte; Porte Pub. Co., Salt Lake City.

How Advertising Is Written—and Why. 1945, $1.85, 150pp., Aesop Glim (George L. Miller); McGraw-Hill, New York.

How to Divide the Words. $2.; Southern Publishers, Kingsport, Tenn.

Manual of Style. 1943, rev., $3., 394pp; Univ. of Chicago Press, Chicago.

Manuscript & Proof. 1937, $1.50, 118pp., John Benbow; Oxford Press, New York.

Practical Proofreading. 1928, rev. ed., Albert H. Highton; United Typothetae of America, Washington, D. C.

Preparing Copy for the Composing Room. Pamphlet; Specialty Paper Div., Eddy Co., Hull, Que.

Proofreading & Copy-Preparation. 1945, rev., $7.50, Joseph Lasky; Mentor Press, New York.

Style Manual of the U. S. Government Printing Office. $1., 302pp.; G.P.O., Washington.

Ornament and decoration

Decorated Book Papers. 1942, $10., Rosamond B. Loring; Dept. of Printing, Harvard College Library, Cambridge, Mass.

Decorative Work of T. M. Cleland. 1929, T. M. Cleland; Pynson Printers, New York.

Handbook of Design & Devices. 1947, 3d ed., $3.75, 218pp., Clarence P. Hornung; Dover Publishers, New York.

Handbook of Ornament. 1923, Franz Meyer; Architectural Book Pub. Co., New York.

Historic Design in Printing. 1923, Henry Lewis Johnson; Graphic Arts, Chicago.

Ornament Catalog. 1946; American Type Founders, Elizabeth, N. J.

Printers' Marks: History of Their Development. 1893, $7.50, W. Roberts; George Bell & Sons, London.

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Advanced Typography. 1931, Walter B. Gress; United Typothetae of America, Washington.

Applied Design for Printers. 1920, H. L. Gage; United Typothetae of America, Washington.

Art of Spacing. 1926, $1.75, 110pp., Samuel A. Bartels; Inland Printer, Chicago.

ATF Printers Catalog. 1947; American Type Founders, Elizabeth, N. J.

Copy Fitting Booklet. 1945, 20pp.; Mergenthaler, Brooklyn, N. Y.

First Principles of Typography. 1936, Stanley Morison; Macmillan, New York.

Fundamentals of Modernism in Typography. 1930, D. C. McMurtrie; Eyncourt Press, Chicago.

Haberule Copy-Caster. $3.50, M. A. Haber; Haberule Co., New York.

How to Make Type Readable. 1941, $2.50, 209pp., Donald G. Paterson & M. A. Tinker; Harper, New York.

Imposition. 102pp.; United Typothetae of America; G. U. Cleeton, Printing Dept., Carnegie Institute, Pittsburgh.

Introduction to Typography. 1932, P. Van Doren Stern; Harper, New York.

I. T. U. Lessons in Printing: reference and instruction books in composition, imposition, display, design, etc.; Bureau of Education, International Typographical Union, Indianapolis.

Making Type Work. 1916, $1.75, Benjamin Sherbow; Century, New York.

Manual of Typography. V. R. Portmann; Univ. of Kentucky Press, Lexington, Ky.

Manual of Typographical Standards. Advertising Production Dept., The New York Times Co., New York City.

Modern & Historical Typography. 16th ed., 1946, $4.50, I. Reiner; Paul A. Struck, New York.

Modern Type Display. 1929, J. L. Frazier, 309 W. Jackson St., Chicago.

Modern Typography & Layout. 1929, $7.50, 190pp., D. C. McMurtrie; Eyncourt Press, Chicago, Illinois.

Newspaper Typography. 1942, $2.75, 178pp., H. E. Jackson; Stanford Press, Stanford University, California.

Notes on Modern Printing. 1946, $5., 77pp., Merle Armitage; Rudge's Sons, New York.

Paragraphs on Printing. 1943, $10., 200pp., Bruce Rogers; Rudge's Sons, New York.

Practice of Printing. 1945, rev., $2.75, Ralph W. Polk; Manual Arts Press, Peoria, Ill.

Practice of Typography: Book Composition. 1918, rev., Theodore Low DeVinne; Century, New York.

Practice of Typography: incl. style & proofreading. 1921, $7.50, Theodore Low DeVinne; Oswald, New York.

Practice of Typography: Plain Printing Types. 1925, Theodore Low DeVinne; Oswald, New York.

Printing Instruction Charts. 1946, $2.50; American Type Founders, Elizabeth, N. J.

Printing Types: Their History, Forms & Uses. 1946, rev. ed., $7.50, 2vs., D. B. Updike; Harvard Univ. Press, Cambridge, Mass.

Printing & Typography for Beginners. 1924, $1.50, Arnold Levitas; McGraw-Hill, New York.

Readability of Type. 1945, 68pp., Mergenthaler, Brooklyn, N. Y.

Science of Imposition. 1928, John Reed; Inland Printer, Chicago.

The Fine Book. 1934, ed. by Porter Garnett; Laboratory Press, Pittsburgh.

Type for Books and Advertising. 1947, $6., by E. M. Ettenberg; D. Van Nostrand Company, Inc., New York City.

Type Lore. 1925, J. L. Frazier; 309 W. Jackson St., Chicago.

Typographers Desk Manual. 1937, Eugene de Lopatecki; Ronald Press, New York.

Typographic Design in Advertising. 1930, $2.25, 128pp., Laurance B. Siegfried; United Typothetae of America, Washington.

Typographical Printing Surfaces. 1916, L. A. Legros & J. C. Grant, Longmans, Green & Co., London.

Typography, Layout & Advertising Production. 1942; Edwin H. Stuart, Inc., Pittsburgh.

Typography of Newspaper Advertisements. 1929, $12.50, F. Meynell, Stokes, New York.

Machine composition

Book of Intertype Faces; and The Intertype: Its Functions, Care, Operation & Adjustment; Intertype Corporation, Brooklyn.

Intertype: Operation & General Maintenance. 1943, $3.75, 473pp., Intertype Corp., Brooklyn.

Linotype Keyboard Operation. 1940, $2.75, 180pp.; Mergenthaler, Brooklyn.

Linotype Machine Principles. 1945, $3.50, 487pp.; Mergenthaler, Brooklyn.

Ludlow Typefaces—Specimen Book. Ludlow Typograph Co., Chicago.

Mechanism of the Linotype. J. S. Thompson & E. M. Keating; Inland Printer, Chicago.

The Monotype: How It Works, History, Specimens of Monotype Book Faces. 1942; Lanston Monotype Machine Co., Philadelphia.

The Monotype System; Mechanism of the Monotype Keyboard; Straight Matter Composition; Lanston Monotype Machine Co., Philadelphia.

Operation & Maintenance of Line Composing & Line Casting Machine. 1923, $2.25, Joseph F. Sorace; Rochester Inst. of Technology, Rochester.

Printing & the Allied Trades. 1939, $3., 318pp., R. Randolph Karch; Pitman, New York.

Specimen Book of Linotype Faces and Manual of Linotype Typography. Mergenthaler, Brooklyn.

Type Face Directory. Annual, Printing Magazine; Walden Sons & Mott, New York.

Useful Matrix Information. 1945, 101pp., Mergenthaler, Brooklyn.

Paper

American Pulp & Paper Mill Superintendents' Year Book. 220 E. 42d St., New York.

Dictionary of Paper. $5.; American Paper & Pulp Ass'n, New York.

Book of Reference (paper uses). 1942, $2.50; Cleveland Paper Co., Cleveland.

Definition & Measurement of Gloss. 1947, 10s., V. G. W. Harrison; Printing & Allied Trades Research Ass'n of Great Britain, London.

Introducing Paper. 1940, $1.50, T. Brown; Chem. Pub., Brooklyn.

Laboratory Handbook of Pulp & Paper Manufacturing. 1943, $10., J. Grant; Longmans Green, New York.

Lockwood's Directory of the Paper & Allied Trades. $10.; Lockwood, New York.

Manufacture of Pulp & Paper. 5vs., $6.50 ea., Pulp & Paper Industry of U. S. & Canada; McGraw-Hill, New York.

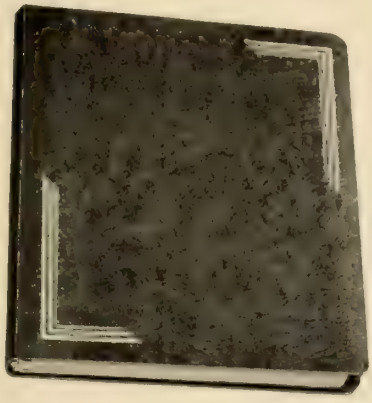
Method of Conditioning Paper for Multicolor Offset Printing. 1940, $1., C. G. Weber & M. N. V. Geib; Lith. Tech. Foundation, New York.

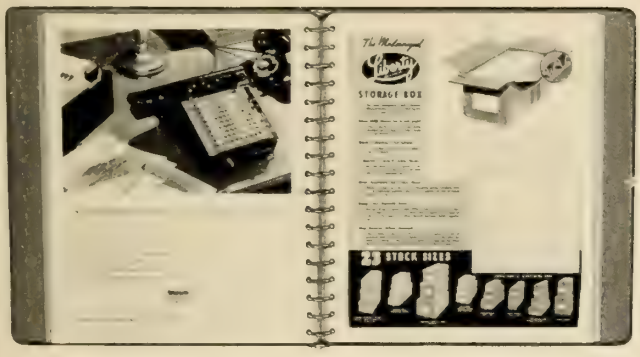
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Newsprint & News Inks. Tech. Bul. 18, U. S. Government Printing Office, Washington.

Old Paper Specimens of Three Centuries. 1945, $2.50; Dave Webb Private Press, Chillicothe, Ohio.

Paper & Paperboard: Characteristics, Nomenclature & Significance of Tests. 1944, $1.50, 108pp.; Committee D-6 on Paper & Paper Products, American Society for Testing Materials, 260 S. Broad St., Philadelphia 2.

The Paper Catalog. Semi-ann.; Walden Sons & Mott, New York

Paper & Pulp Mill Catalog. Ann.; Fritz Publications, Chicago.

Paper Makers Directory of All Nations. 1943, and subseq., 25s.; Odhams Press, London.

Paper Testing & Chemistry for Printers. 1942, $4.50, G.-A. Jahans; Commercial Engraving & Printing Co., Indianapolis.

Paper Trade Terms. 1944, $1.50; W. B. Wheelwright; Callaway Associates, Boston.

Paper; What the Lithographer Should Know About It. Scheduled for 1948, $1., Robert F. Reed; Lith. Tech. Foundation, New York.

The Paper Year Book, 1947 Edition. $8; Davidson Publishing Co., 22 E. Huron St., Chicago 11.

Papers for Offset Lithography. Scheduled for 1948, 75c; Lith. Tech. Foundation, New York.

The Pocket Pal (paper uses). E. B. Eddy Co., Hull, Que.

Post's Paper Mill Directory. L. D. Post, Inc., New York City.

Printing Papers. 1936, rev., $2.50, William B. Wheelwright; Univ. of Chicago Press, Chicago.

Pulp & Paper Manual of Canada. Ann.; National Business Publications, Gardenvale, Que.

Technical Association Papers. Ann., $8., Technical Ass'n of the Pulp & Paper Industry; American Pulp & Paper Ass'n, New York.

Walden's ABC Guide. Annual, $2; Walden Sons & Mott, New York City.

Ink

Drying of Lithographic Ink. 1944, $1., R. F. Reed, L. E. Cadwell, R. L. Benemelis; Lith, Tech. Foundation, New York.

Inks for Offset Lithography. Scheduled for 1948, 75c; Lith. Tech. Foundation, New York.

Printing Inks; Their Chemistry & Technology. 1940, $7., 560pp., Carleton Ellis; Reinhold Pub. Corp., New York.

Printing & Litho Inks. 1944, $6., 295pp., H. I. Wolfe; MacNair-Dorland, New York.

Raw Materials Used in Printing Ink. 1942; Printing Ink Makers Ass'n of Philadelphia, 723 N. 3d St., Philadelphia 23.

Tackiness, Glazing & Engraving of Offset Blankets. 1931, $1., Robert F. Reed; Lith. Tech. Foundation, New York.

Duplicating plates; stereotyping, electrotyping, mats

Electrotyping, in Its Relation to the Graphic Arts. 131pp, Edward S. Pilsworth; Macmillan, New York City.

How to Get Better Electrotypes. Pamphlet; International Ass'n of Electrotypers & Stereotypers, Cleveland.

Making & Molding of Plastics. 1945, $6., 242pp., I. M. T. Bell; Chemical Pub. Co., Brooklyn.

Manual of Stereotyping. 1943, $5., 256pp., Joseph D. Goggin; Kable Bros., Mt. Morris, Ill.

Manufacture of Electrotypes. 47pp., John P. Dunne; Olmstead, Perrin & Leffingwell, Inc., New York.

New History of Stereotyping. 1944, 362pp., George A. Kubler; Certified Dry Mat Corp., N. Y.

Process of Electrotyping. 1929, International Ass'n of Electrotypers & Stereotypers, Cleveland.

A Short History of Stereotyping. 1927, rev.; Certified Dry Mat Corp., New York.

Stereotype Mat-Rolling & Casting. 1942, 26pp., 50c, Joseph F. Sorace; Rochester Atheneum & Mechanics Institute, Rochester.

Photo-engraving

Achievement in Photo-Engraving & Letterpress Printing. 1927, Louis Flader; American Photo-Engravers Ass'n, Chicago.

Art & Technique of Photo-Engraving. 1946, $1.50, Julien J. Soubiran; Horan, New York.

Art Work; processes. $5., 130pp., J. Petrina; Commercial Pub. Co., Indianapolis.

Engraving Specifications for Magazine Printing. Conde Nast Press, Greenwich, Conn.

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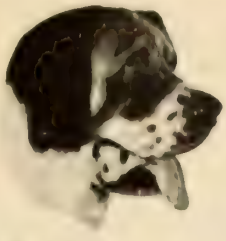
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September 12, 1947

Mr. George Mevi
The Mevi Company
801 - 3rd Avenue
New York, N.Y.

Dear Mr. Mevi:

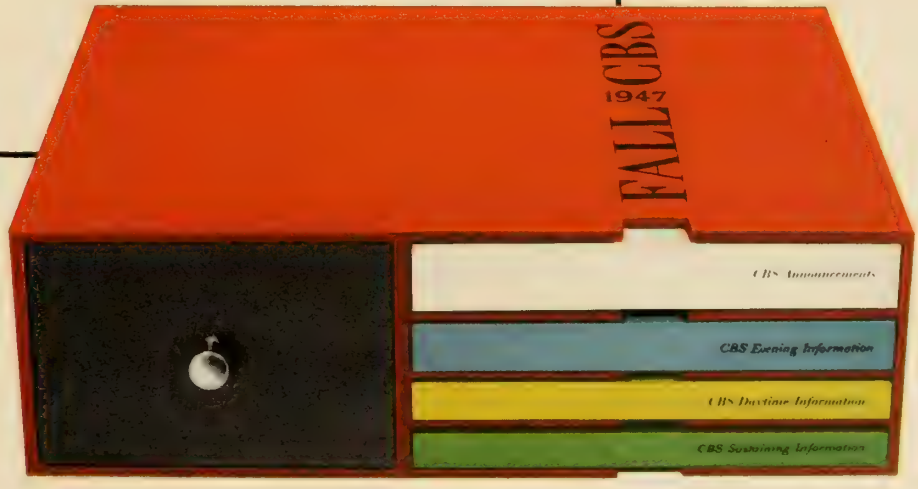
The campaign boxes which your people so efficiently constructed have now gone out to all our stations. Everyone here at CBS was delighted with the finished product. I am sure the stations will echo this sentiment. Please convey our thanks to your staff, especially Miss Bruce and "Guido" for the craftsmanship displayed.

Sincerely,

Edward W. Side

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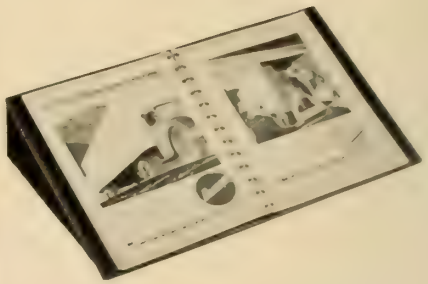


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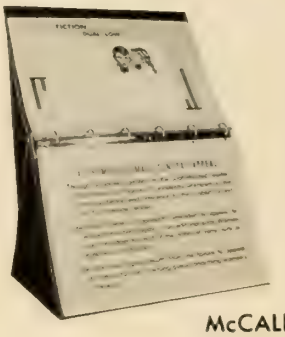
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Display World. Mo., $3., c. 11,000; Display Pub. Co., 1209 Sycamore St., Cincinnati, Ohio.

Editor & Publisher. Wkly., $4., c. 20,000; Editor & Publisher Co., 1475 Broadway, New York-18.

Electrotypers & Stereotypers Bulletin. Mo., $5., c. 700; National Ass'n of Electrotypers & Stereotypers, Inc., Leader Bldg., Cleveland-14, Ohio.

Electrotypers & Stereotypers Journal. Mo., 4s., Stonhill & Gillis, Ltd., 329 High Holborn, London-WC-1.

Good Packaging. Mo., c. 4,400; Pacific Trade Papers, 260 California St., San Francisco-11.

Graphic Arts Monthly & The Printing Industry. Mo., c. 46,500; Graphic Arts Pub. Co., 608 S. Dearborn St., Chicago.

Guild Reporter. Semi-mo., $2., c. 24,000; American Newspaper Guild, 63 Park Row, N. Y.

Highlight. Mo., $2., Alroy Pub. Co., 11½ W. 26th St., New York-10.

Industrial Marketing. Mo., $2., c. 6,600; Advertising Publications, Inc., 100 E. Ohio St., Chicago-11, Illinois.

Inland Printer. Mo., $4., c. 10,000; Inland Printer Co., 309 W. Jackson Blvd., Chicago-6.

International Bookbinder. Bi-mo., $3., c. 30,000 (largely contr. free distr.); International Brotherhood of Bookbinders, 300 A. F. of L. Bldg., Washington-1, D. C.

Lithographers' Journal. Mo., $4., c. 10,000; Amalgamated Lithogaphers of America, 450 7th Ave., New York-1.

Mail Order Journal. Mo., $1., c. 3,450, Gerstner Publications, 212 W. 50th St., New York-19.

Minicam Photography. Mo., $2.50, c. 82,500; Automobile Digest Pub. Corp., Cincinnati.

Modern Lithographer & Offset Printer. Mo., 10s.; F. W. Bridges, Ltd., 8 Fryston Ave., Croydon, Eng.

Modern Lithography. Mo., $3., c. 2,640, Photo-Lithographer, Inc., 254 W. 31st St., New York-1.

Modern Packaging. Mo., $5., c. 10,000; Modern Packaging Corp., 122 E. 42d St., New York-17.

Modern Plastics. Mo., $5., c. 10,500; Modern Plastics, Inc., 122 E. 42d St., New York-17.

National Lithographer. Mo., $3., 11 Park Pl., N. Y.

National Photographic Dealer. Mo., $2., c. 3,800; National Photographic Dealer Pub. Co., 35 Park Ave., New York-16.

National Publisher. Mo., $2., c. 6,000; National Editorial Ass'n, 188 W. Randolph St., Chicago-1.

New England Printer & Publisher. Mo., $2., c. 2,000; 74 India St., Boston-10.

Outdoor Advertising Ass'n News. Quarterly, $1., c. 1,400; Outdoor Advertising Ass'n of America, Inc., Chicago.

Pacific Printer & Publisher. Mo., $2., c. 1,500; Roy M. McDonald, Rialto Bldg., San Francisco-5.

Packaging Parade. Mo., c. 10,200; Haywood Pub. Co., 360 N. Michigan Ave., Chicago-1.

Packaging Service. Mo., $4., c. 8,900; PS Publications, Inc., 11 W. 42d St., New York-18.

Paper Industry & Paper World, Inc., Mo., $2., c. 6,100; Fritz Publications, 59 E. Van Buren St., Chicago.

Paper Merchandising. Mo., $5., c. 3,000, Lockwood Pub. Co., 15 W. 47th St., New York-19.

Paper & Paper Products. Semi-mo., $3., Walden, Sons & Mott, 41 Park Row, New York-7.

Paper Mill News. Wkly., $4., c. 2,500; L. L. Post, Inc., 1440 Broadway, New York-18.

Paper Trade Journal. Wkly., c. 6,000; Lockwood Trade Journal Co., 15 W. 47th St., N. Y. 19.

Patent & Trade-Mark Review. Mo., $7.50; Trade Activities, Inc., 347 Madison Ave., New York-17.

Photo-Engravers Bulletin. Mo., $3., c. 1,500; American Photo-Engravers Ass'n, 166 W. Van Buren St., Chicago-4.

Photographic Trade News. Mo., $2., c. 6,500; Photographic Trade News, Inc., 381 Fourth Ave., New York-16.

Photo Technique. Mo., $5.; McGraw-Hill Pub., Co., 330 W. 42d St., New York-18.

Print. Quart., $7.50, c. 2,200; W. E. Rudge Pub. Inc., 24 Elm St., Woodstock, Vt.

Printed Selling; Mo., contr. free distr.; c. 19,500, Davidson Pub. Co., Chicago.

Printers Exchange Bulletin. Mo., c. 3,500; 671 N. Alexandria Ave., Los Angeles 4.

Printers' Ink. Wkly., $4., c. 20,000; Printers' Ink Pub. Co., 205 E. 42d St., New York-18.

Printing. Mo., $3., c. 7,500; Walden, Sons & Mott. 41 Park Row, New York-7.

Printing Equipment Engineer. Mo., c. 9,000; Willsea Pub. Co., 1276 W. 3rd St., Cleveland 13, O.

Printing News. Wkly., $2., 3,500; Printing News, Inc., 468 Fourth Ave., New York-16.

Printing Review of Canada. Mo., $2., c. 2,000; Canada Printing Review Co., 1117 St. Catherine St. W., Montreal.

Publishers' Auxiliary. Wkly., Western Newspaper Union, 210 S. Desplaines St., Chicago-6.

Publishers Weekly. $5.; R. R. Bowker Co., 62 W. 45th St., New York-19.

Pulp & Paper Industry. Mo., $4., c. 2,000; Miller Freeman Pub., 71 Columbia St., Seattle.

Pulp & Paper Magazine of Canada. Mo., $5., c. 1,500; National Business Publications, Ltd., Gardenvale, Que.

Reporter of Direct Mail Advertising. Mo., $3., c. 4,000; Henry Hoke, 17 E. 42d St., N. Y.

Signs of the Times. Mo., $3., c. 10,500; Signs of the Times Pub. Co., 1209 Sycamore St., Cincinnati-1, Ohio.

Southern Printer. Mo., $2., Ernest H. Abernathy Pub. Co., 75 Third St. N.W., Atlanta, Ga.

Southern Pulp & Paper Journal. Mo., $3., c. 2,200; Ernest H. Abernathy, 75 Third St. N.W., Atlanta, Ga.

Southwestern Advertising & Marketing. Mo., c. 2,500; J. R. Brown, Southland Life Annex, Dallas, Tex.

Standard Rate & Data Service. Mo., (subs., ind. section, $25); 333 N. Michigan Ave., Chicago-1, and 420 Lexington Ave., New York-17.

Tide. Wkly., $5., c. 10,250; Tide Pub. Co., 232 Madison Ave., New York-16.

Trade Compositor. Mo., $2., c. 1,000 (largely controlled free distribution); International Trade Composition Ass'n; M. & L. Pub. Co., 629 Chestnut St., Philadelphia-6.

Trade-Mark Reporter. Mo., $10., c. 500; United States Trade-Mark Ass'n, 522 Fifth Ave., N. Y.

Typographical Journal. Mo., $1.; International Typographical Union, Indianapolis, Ind.

U. S. Camera. Mo., $1.50, c. 209,000; U. S. Camera Pub. Co., 420 Lexington Ave., N. Y.

Western Advertising. Mo., $2., c. 3,500; Ramsey Oppenheim Publications, 564 Market St., San Francisco-4.

U. S. Government Advertiser. Wkly., $15., c. 7,650; U. S. Government Advertiser, Inc., 511 11th St. N.W., Washington-4, D. C.

U. S. Patents Quarterly. (Weekly sheets), patents, trade-marks, copyrights; $104; Bureau of National Affairs, Inc., Washington, D. C.

World's Press News & Advertisers' Review. Wkly., 25s., World Press News Publishing Co., Ltd., 20 Tudor St., London-EC-4.

House organ list

(EDITOR's NOTE: In preparing this list originally, it was planned to include only those publications whose subject matter dealt exclusively with graphic arts information. However, in compiling it a number of other publications were also listed, house organs used by advertising agencies, book publishers, and magazine publishing houses. It was felt that these, in a general way, would be of interest in a compilation of this kind.)

Key:

Adv.	Advertising
Assn.	Association
Bk. Pub.	Book Publisher
Comp.	Compositor
Ele.	Electrotyper
Eng.	Engraver
Eq.	Equipment
G. C.	Greeting Cards
Lith.	Lithographer
Mach.	Machinery
Mag.	Magazine
News.	Newspaper
P. D.	Paper Dealer
P. Mfg.	Paper Manufacturer
Pr.	Printer
Pub.	Publication
P. S.	Publishers Service

Adams Impressions
Byron S. Adams (Pr.)
512 11th N. W.
Washington, D. C.

Advertiser, The
Needham & Grohmann, Inc. (Adv.)
630 Fifth Ave., N. Y. C.

Advertisers Digest
Publishers' Digest (Pub.)
510 N. Dearborn
Chicago, Ill.

American Freeman, The
Haldeman-Julius Co. (Bk. Pub.)
Girard, Kan.

Among Ourselves
Haire Publishing Co. (Mag.)
1170 Broadway, N. Y. C.

Among Ourselves
Olsen Publishing Co. (Pub.)
505 W. Cherry
Milwaukee, Wisconsin

Apaco Chatter Box, The
Atlanta Paper Co. (P. D.)
225 Moore St. S. E.
Atlanta, Ga.

ATF Newsreel
American Type Founders (Eq.)
200 Elmora Ave.
Elizabeth, N. J.

Atlas Equipment News
Atlas Press Co. (Eq.)
1819 N. Pitcher
Kalamazoo, Mich.

Ayer News File
N. W. Ayer & Son, Inc. (Adv.)
Washington Sq.
Philadelphia, Pa.

B & B Bulletin
Benton & Bowles Inc. (Adv.)
444 Madison Ave., N. Y. C.

Baldwin Solls
Baldwin Paper Co. (P. D.)
233 Spring St., N. Y. C.

Bandwagon, The
Macfadden Publications, Inc. (Pub.)
205 E. 42nd St.
New York, N. Y.

Base Facts
The Printing Machinery Co. (Eq.)
436 Commercial Sq.
Cincinnati, Ohio

Beam, The
Jahn & Ollier Engraving Co. (Eng.)
817 W. Washington Blvd., Chi.

Beckett News Letter, The
The Beckett Paper Co. (P. Mfg.)
4th & Buckeye
Hamilton, Ohio

Behind the Job
Fuller & Smith & Ross, Inc. (Adv.)
1501 Euclid Ave.
Cleveland, Ohio

Better Impressions
The Mead Corp. (P. Mfg.)
230 Park Ave.
New York, N. Y.

Between Editions
The Evening Bulletin (News.)
Juniper & Filbert Sts.
Philadelphia, Pa.

Between the Lines
The Bruce Publishing Co. (Pub.)
540 N. Milwaukee
Milwaukee, Wis.

Book Company Notes
McGraw-Hill Book Co. (Pub.)
330 W. 42d St.
New York, N. Y.

Brass Tracks
Worcester Telegram
& Evening Gazette (News.)
Worcester
Massachusetts

Bryanteer
Bryant Paper Co. (P. Mfg.)
2030 Portage
Kalamazoo, Mich.

Business by Mail
Wilson Studio Press (Pr.)
1728 Monroe
Madison
Wisconsin

Buzzer, The
Blake, Moffit & Towne (P. D.)
599 Eighth St.
San Francisco, Calif.

Byroads
The Rhoads Press (Pr.)
610 E. 11 St.
Kansas City, Mo.

Caps and Lower Case
Jaggars-Chiles-Stovall, nc. (Pr.)
522 Browder St.
Dallas, Tex.

Chats
Clark Sprague Printing Co. (Pr.)
1901 Locust
St. Louis, Mo.

Chatter
Newsweek Magazine (Mag.)
152 W. 42 St.
New York, N. Y.

Chicago Paper Salute
Chicago Paper Co. (P. D.)
801 S. Wells
Chicago, Ill.

Chick Clearings
Hammermill Paper Co. (P. Mfg.)
Hammermill Road
Erie, Pa.

Colonial Bookbuilder, The
The Colonial Press, Inc. (Pr.)
Clinton
Massachusetts

Consumer News Digest
Committee on Consumer Relations in
Advertising, Inc. (Assn.)
420 Lexington Ave.
New York, N. Y.

Conti-Glo Black Light Beacon
Continental Lithographic
Corp. (Li.)
952 E. 52 St.
Cleveland, Ohio

Co-operation
Kimberly-Clark Corp. (P. Mfg.)
128 N. Commercial
Neenah, Wis.

Co-operator, The
The Bruce Publishing Co. (Pub.)
540 N. Milwaukee
Milwaukee
Wisconsin

Copco Courier
Copco Co-operator
The Central Ohio Paper Co. (P. D.)
226 N. 5th St.
Columbus, Ohio

Corn Crib, The
The American Magazine (Mag.)
250 Park Ave., N. Y. C.

Counter Points
The World Publishing Co. (Pub.)
2231 W. 110th St.
Cleveland, Ohio

Cuff Stuff
Oklahoma Publishing Co. (News.)
4th & Broadway
Oklahoma City, Okla.

Cuneo Topics
The Cuneo Press, Inc. (Pr.)
22d & Canal
Chicago, Ill.

Curtis Field News
Curtis Publishing Co. (Mag.)
Independence Sq.
Philadelphia, Pa.

Dear Diary
The Norman Press (Pr.)
510 N. Dearborn
Chicago, Ill.

Dell Digest
Dell Publishing Co. (Pub.)
149 Madison Ave., N. Y. C.

Depictor, The
Depictor, Jr.
Edward Stern & Co. Inc. (Pr.)
140 N. 6th St.
Philadelphia, Pa.

Design & Paper
Marquardt & Co. Inc. (P. D.)
155 Spring St.
New York, N. Y.

Direct Selling Digest
Martin Advertising Agency (Adv.)
15 E. 40th St., N. Y. C.

Dividends
Ketchum, McLeon
& Grove, Inc. (Adv.)
Koppers Bldg.
Pittsburgh, Pa.

Dixietype, The
Dixie Electrotype Co. (Ele.)
Nashville, Tenn.

Don Herold's Magazine
The Don Herold Co. (P. S.)
155 E. 42d St., N.Y.C.

Drake Impressions
Drake Press (Pr.)
333 S. Broad St.
Philadelphia 7, Pa.

Dutton News of Books and Authors
E. P. Dutton Co. Inc. (Pub.)
300 Fourth Ave., N. Y. C.

Eagle-A Reporter
Eagle Topics
American Writing Paper
Corp. (P. Mfg.)
9 Main, Holyoke, Mass.

Echo
Ecusta Paper Co. (P. Mfg.)
Box 200
Pisgah Forest, N. C.

Engineering Construction Markets
Engineering News Record
and Construction Methods (Mag.)
330 W. 42d St., N. Y. C.

Esquire Ink
Esquire, Inc. (Mag.)
919 N. Michigan
Chicago, Ill.

Fair Prospect, A
The Nation's Business (Mag.)
1615 H. St. N.W.
Washington, D. C.

William Feather Magazine, The
The William Feather Co. (Pr.)
812 Huron Road
Cincinnati, Ohio

Federal Commentator
Federal Advertising
Agency, Inc. (Adv.)
444 Madison Ave., N. Y. C.

Flash, The
Zellerbach Paper Co. (P. Mfg.)
534 Battery St.
San Francisco, Calif.

House organ list, cont.

Footnotes
The Dietz Press, Inc. (Pr.)
112 E. Cary
Richmond, Va.

Forbes Hello-Gram
Forbes Lithograph Mfg. Co. (Lith.)
Box 513, Boston, Mass.

Four Star Final
G. P. Putnam's Sons;
Coward-McMann, Inc.
The John Day Co. (Pub.)
2 W. 45th St., N. Y. C.

Friendly Adventurer, The
Bermingham & Prosser Co. (P. D.)
508 East Frank
Kalamazoo, Mich.

f.y.i.
Time, Inc. (Mag.)
Time & Life Bldg.
9 Rockefeller Plaza, N. Y. C.

Gilcrafter
Gilbert Paper Co. (P. Mfg.)
Menasha, Wis.

Gossiper, The
Worcester Telegram
& Evening Gazette (News.)
Worcester, Mass.

Goss Press, The
The Goss Printing
Press Co. (Mach.)
1535 S. Paulina
Chicago, Ill.

Greetings from Hollywood
Buzza-Cardozo (G. C.)
3257 Wilshire Blvd.
Los Angeles, Calif.

Gregg News Letter
Gregg Publishing Co. (Pub.)
270 Madison Ave.
New York, N. Y.

Grey Matter
Grey Advertising Agency (Adv.)
166 W. 32d St.
New York, N. Y.

Hailman Salesman
Hailman Printing Co. (Pr.)
2006 Wyandotte St.
Kansas City, Mo.

Hammermill Bond, The

Hammermill News Letter
Hammermill Paper Co. (P. Mfg.)
Hammermill Road
Erie, Pa.

Harcourt Brace News
Harcourt, Brace & Co. (Pub.)
383 Madison Ave.
New York, N. Y.

Harris Impressions
Harris-Seybold Co. (Mach.)
4510 E. 71st St.
Cleveland, Ohio

Have You Heard?
Edward Stern & Co. Inc. (Pr.)
140 N. 6th St.
Philadelphia, Pa.

Here and There
The John C. Winston Co. (Pub.)
1006 Arch St.
Philadelphia, Pa.

Highlights
The Beck Engraving Co. Inc. (Eng.)
7th & Sansom Sts.
Philadelphia, Pa.

Hits & Bits
Buckeye Printing Co. (Pr.)
N2A Monroe St.
Spokane, Wash.

Hollingsworth Log
Hollingsworth
& Whitney Co. (P. Mfg.)
Waterville, Me.

House Dope
W. F. Hall Printing Co. (Pr.)
4600 Diversey
Chicago, Ill.

Ideas
Buckley-Dement
Advertising Corp. (Adv.)
705 W. Jackson Blvd.
Chicago, Ill.

Informant, The
Zellerbach Paper Co. (P. Mfg.)
534 Battery St.
San Francisco, Calif.

Iron Age, Jr., The
The Iron Age (Pub.)
100 E. 42d St., N. Y. C.

It's New
Geare-Marston, Inc. (Adv.)
1600 Arch St.
Philadelphia, Pa.

Jaqua Way, The
The Jaqua Co.
101 Garden, S. E.
Grand Rapids, Mich.

Jensenews
The Jensen Printing Co. (Pr.)
114 N. 3d St.
Minneapolis, Minn.

Kalends, The
Waverly Press, Inc. (Pr.)
Mt. Royal & Guilford
Baltimore, Md.

Lakeside News, The
R. R. Donnelley & Sons Co. (Pr.)
350 E. 22d St., Chicago, Ill.

Linotype News, The
Mergenthaler Linotype Co. (Mach.)
29 Ryerson St., Brooklyn, N. Y.

Little Journal, The
The Milwaukee Journal (News.)
333 West State
Milwaukee, Wis.

Log of Champion Activities, The
Champion Paper
& Fiber Co. (P. Mfg.)
Canton, N. C.

Look Spotlight
Look, Inc. (Mag.)
1912 Grand Ave.
Des Moines, Iowa

Macfadden Wholesaler, The
Macfadden Publications, Inc. (Pub.)
205 E. 42d St.
New York, N. Y.

Manz Word
Manz Corp. (Mach.)
4043 Ravenswood
Chicago, Ill.

McGraw-Hill Bulletin, The
McGraw-Hill Publishing Co. (Mag.)
330 W. 42d St.
New York, N. Y.

McCall Spirit
McCall Corp. (Mag.)
McCall St.
Dayton, Ohio

Memo-randoms
Q. S. Tyson & Co. Inc. (Adv.)
250 Park Ave.
New York, N. Y.

Meredith Imprint, The
Meredith Publishing Co. (Pub.)
1716 Locust
Chicago, Ill.

Miller Mascot
Miller Printing Machinery Co. (Eq.)
1117 Reedsdale St.
Pittsburgh, Pa.

Mimeo-Topics
A. B. Dick Co. (Mach.)
720 W. Jackson
Chicago, Ill.

Nashua Cavalier, The
Nashua Triangle, The
Nashua Gummed & Coated
Paper Co. (P. Mfg.)
Nashua, N. H.

The Navigators' Log:
The Navigators (Graphic Arts)
535 Fifth Ave.
New York 17, N. Y.

Neenah
Neenah Paper Co. (P. Mfg.)
Neenah, Wis.

Nepco Digester
Nekoosa-Edwards Paper Co. (P. Mfg.)
Port Edwards, Wis.

Newell Post
Newell-Emmet Co. (Adv.)
40 E. 34th St., N. Y. C.

New York Sun, The
New York Sun (News.)
280 Broadway, N. Y. C.

Northern Lights
Northern Paper Mills (P. Mfg.)
Monroe & Day
Green Bay, Wis.

Note-Book of
Joseph K. Arnold, Printer,
The Joseph K. Arnold Co. (Pr.)
123 N. Sangamon
Chicago, Ill.

Open Book, The
The World Publishing Co. (Pub.)
2231 W. 110th St.
Cleveland, Ohio

Oregonian, The
Oregonian Publishing Co. (News.)
Portland, Ore.

Our World
The World Publishing Co. (Pub.)
2231 W. 110th St.
Cleveland, Ohio

Papergraphs
Commercial Paper Corp. (P. Mfg.)
48 Jackson St.
San Francisco, Calif.

Paper News Poster
Crocker-McElwain Co. (P. Mfg.)
Cabot St.
Holyoke, Mass.

Paper Parade
Jackson Paper Co. (P. D.)
Box 3501
West Jackson, Miss.

Pejepscot Review
Pejepscot Paper Co. Inc. (P. Mfg.)
420 Lexington Ave., N. Y. C.

Permanence
L. L. Brown Paper Co. (P. Mfg.)
Adams, Mass.

P. D., The
Cleveland Plain Dealer (News.)
Cleveland, Ohio

Penton Progress
The Penton Publishing Co. (Mag.)
1213 W. 3d St.
Cleveland, Ohio

Phil's Imp
Imperial Printing Co. (Pr.)
419 S. 3d St., Minneapolis, Minn.

Phorum
Prentice-Hall, Inc. (Pub.)
70 Fifth Ave., N. Y. C.

Planned Printing
Rufus H. Darby Printing Co. (Pr.)
24th & Douglas N.E.
Washington, D. C.

Please Note
H. J. Kaufman Advertising (Adv.)
Homer Bldg.
Washington, D. C.

Pleasures of Publishing
Columbia University Press (Pub.)
2960 Broadway, N. Y. C.

Pocket Bookseller
Pocket Books, Inc. (Pub.)
1230 Avenue of the Americas
New York, N. Y.

Point of View
Geffen, Dunn & Company (Pr.)
76 Ninth Ave., N. Y. C.

Postage Stamp, The
Miles Kimball Co. (Adv.)
Oshkosh, Wis.

Press Piper
Kingsport Press, Inc. (Pr.)
Reedy & Roller
Kingsport, Tenn.

Printed Punch
Humphrey Press, Inc. (Pr.)
Geneva, N. Y.

House organ list, cont.

Printed Words
Von Hoffmann Press (Pr.)
105 S. 9th St.
St. Louis, Mo.

Printer's Helper, The
The Kelsey Co. (Pr.)
Meriden, Conn.

Printopics
Provence-Jarrard Co. (Pr.)
214 W. McBee
Greenville, S. C.

Printsmith, The
Smith Printing Co. (Pr.)
1011 N. 6th St.
Kansas City, Kan.

Prints of Paris
Paris Printing Co. (Pr.)
1535 Walnut St.
Kansas City, Mo.

Progress
Progress Lithographing Co. (Lith.)
Reading
Cincinnati, Ohio

Proof Sheet, The
Caskie Paper Co. Inc. (P. D.)
308 E. 4th St.
Charlotte, N. C.

P. S.
Comfort Ptg. & Stationery Co. (Pr.)
107 N. 8th St.
St. Louis, Mo.

Pulp & Paper Bulletin
Bulkley, Dunton & Co. (P. D.)
295 Madison Ave.
New York, N. Y.
(and in New England)
Carter, Rice & Co.
273 Summer St.
Boston 1, Mass.

Ragt
Rand Avery-Gordon Taylor, Inc. (Pr.)
871 Commonwealth
Boston, Mass.

Rambling Rose, The
Rose Printing Co. (Pr.)
Rose Bldg.
Tallahassee, Fla.

Rapid Way, The
Rapid Electrotype Co. (Ele.)
41 Burroughs Ave.
Detroit, Mich.

Recorder, The
Recorder Ptg. & Pub. Co. (Pr.)
99 S. Van Ness
San Francisco, Calif.

Retail Grey Matter
Grey Advertising Agency (Adv.)
166 W. 32d St.
New York, N. Y.

Retail Merchandising
Haire Publishing Co. (Mag.)
1170 Broadway
New York, N. Y.

Ripco Ripples
Rhinelander Paper Co. (P. Mfg.)
Rhinelander, Wis.

Rogers Printogram, The
The Rogers Print (Pr.)
20 Monroe St.
Plymouth, Mass.

Romer's Thinker
Romer Advertising Service (Adv.)
1108 Woodward Bldg.
Washington, D. C.

Roving Reporter Reiss
Reiss Advertising (Adv.)
221 W. 57th St., N. Y. C.

Rustonian
Rust Craft Publishers, Inc. (G. C.)
1000 Washington St.
Boston, Mass.

St. Croix Observer
St. Croix Paper Co. (P. Mfg.)
Woodland, Me.

Sales Sense
Advertisers' Publishing Co. (Pr.)
530 S. Forest
Ann Arbor, Mich.

Sales Talk
Publishers' Digest (Pub.)
510 N. Dearborn
Chicago, Ill.

Shop Talk
Printers Ink Pub. Co. (Pub.)
205 E. 42d St.
New York, N. Y.

S. J. T. Makers, The
Star Journal & Tribune (News.)
427 6th Ave. S.
Minneapolis, Minn.

Snips
Lancaster Newspapers (News.)
8 West King
Lancaster, Pa.

Speaking of Perfection
Paper Manufacturing Co. (P. D.)
5th & Willow Sts.
Philadelphia, Pa.

Speed-O-Print Merchandiser
Speed-O-Print Corp. (Eq.)
161 E. Grand Ave.
Chicago, Ill.

Spirit, The
Des Moines Register
& Tribune (News.)
715 Locust St.
Des Moines, Iowa

Standpatter, The
The Standard Publishing Co. (Pub.)
640 W. 8th St.
Cincinnati, Ohio

Star-Telegram Jr.
The Fort Worth Star-
Telegram (News.)
Fort Worth, Tex.

Stet
The Champion Paper
& Fibre Co. (P. Mfg.)
Hamilton, Ohio

Strathmorean, The
Strathmore Paper Co. (P. Mfg.)
Woronoco, Mass.

Successful Advertising
Horton-Noyes (Adv.)
2300 Industrial Trust Bldg.
Providence 3, R. I.

Successful Advertising
Van Sant Dugdale & Co. Inc. (Adv.)
Court Sq. Bldg.
Baltimore, Md.

Sun Guide
Sun Rays
The Chicago Sun (News.)
400 W. Madison
Chicago, Ill.

Syndicate Selling
Dell Publishing Co. (Pub.)
149 Madison Ave.
New York, N. Y.

Tab
Chicago Times, Inc. (News.)
211 W. Wacker Drive
Chicago, Ill.

Tale of Two Printers, The
Bebout & Downs, Inc. (Pr.)
1514 Prospect
Cleveland, Ohio

Taste & Color Control
West Virginia Pulp
& Paper Co. (P. Mfg.)
230 Park Ave., N. Y. C.

Teaching Aids Bulletin
Scholastic Magazine (Mag.)
220 W. 42d St., N. Y. C.

Teamwork
The Nation's Business (Mag.)
1615 H St. N.W.
Washington, D. C.

Television Grey Matter
Grey Advertising Agency (Adv.)
166 W. 32d St., N. Y. C.

Timely News Topics
The Hancock Press (Pr.)
80 Hancock
Lexington, Mass.

Tips
The Inland Press (Pub.)
Box 2021
Asheville, N. C.

Tips & Taps
Garamond Press (Pr.)
15 S. Frederick St.
Baltimore, Md.

Tissue Topics
Hoberg Paper Mills (P. Mfg.)
Green Bay, Wis.

Tom-Tom, The
Associated Advertising
Agency (Adv.)
Florida National Bank Bldg.
Jacksonville, Fla.

Topics in Ten Point
The Lund Press, Inc. (Pr.)
700 S. 4th St.
Minneapolis, Minn.

Trends of the Times
New York Times Co. (News.)
229 W. 43d St., N. Y. C.

Triangle Monthly
Triangle Converted & Container
Paper Co. (P. Mfg.)
Hamilton, O. H.

Trib, The
Chicago Tribune Press
435 N. Michigan
Chicago, Ill.

Type Talks
New York Group
Advertising Typographers
Association of America
461 Eighth Ave.
New York 1, N. Y.

Typing Tips
Miller-Bryant Pierce (Pr.)
Aurora, Ill.

Typographic
Edwin H. Stuart, Inc. (Pr.)
422 First Ave.
Pittsburgh, Pa.

U. S. News Bulletin
The U. S. Printing
& Lithographing Co. (Pr.)
Beech & Robertson Ave.
Cincinnati, Ohio

Wartburg Warbler, The
The Wartburg Press (Pr.)
55 East Main St.
Columbus, Ohio

Wedge, The
Batten, Barton, Durstine
& Osborn, Inc. (Adv.)
383 Madison Ave.
New York, N. Y.

Weston's Record
Byron Weston Co. (P. Mfg.)
Dalton, Mass.

Westvaco
Inspirations for Printers
West Virginia Pulp
& Paper Co. (P. Mfg.)
230 Park Avenue, N. Y. C.

What's Cooking?
David C. Cook Publishing Co. (Pub.)
850 N. Grove Ave.
Elgin, Ill.

What's Going On
New York Herald Tribune (News.)
230 W. 41st St.
New York, N. Y.

White Space
The Nation's Business (Mag.)
1615 H St. N.W.
Washington, D. C.

Whos Who in the
Composing Room
Who's Who in Intertype
Intertype Corp. (Mach.)
360 Furman St., Brooklyn, N. Y.

Wolff Tracks
H. Wolff Book Mfg. Co. (Pr.)
508 W. 26th St., N. Y. C.

York Trade Compositor
York Composition Co. (Comp.)
Bierman & Rose, York, Pa.

Protecting ideas and products

How to legally protect 74 common articles from Abbreviations to Watermarks; when and how to apply for patent, copyright, trade-mark registration

Irving Hartman

Obviously, all kinds of original ideas are not subject matter for statutory protection, and those that are must first be reduced to actual practice, or put on paper, before they may merit some form of legal protection, such as with trade-marks, copyrights, and patents.

Trade-marks

Figuratively, a trade-mark is the commercial signature of the producer or seller, and it is this "signature" that gives the buying public confidence. A trade-mark's function is to indicate to the public the manufacturing origin of the merchandise.

The advantages of registration were increased materially on July 5, 1947, when the new Lanham Trade-Mark Act went into effect. (See Cross-Reference Index on Lanham Act.) This new law has as its purpose the strengthening of trade-mark rights, giving greater protection to the public in carrying out international treaty commitments. It is generally agreed that it is of material benefit both to the business man and to the individual. Further data can be obtained in a pamphlet, "Industry's View on Trade-Mark Reform," published by the National Association of Manufacturers, 14 West Forty-ninth Street, New York 20, N. Y.

Copyrights

In brief, a copyright is the exclusive right to reproduce, publish, and sell the matter and form of a literary or artistic work. Copyrights have no connection with trade-marks and are subject to entirely unrelated laws. Generally, the following comprise subject matter for copyright:

Books (incidentally, the term "books" includes pamphlets, leaflets, separate poems, or single pages), periodicals, newspapers, lectures, sermons, addresses, dramatic and musical compositions, maps, works of art, models of designs for works of art, reproduction of a work of art, drawings or plastic works of a scientific nature, prints, labels, pictorial illustrations, photographs, and movies, whether amateur or professional.

An important requirement in connection with copyrighting a work is to see that the required copyright notice be affixed to each and every copy if they are to be published. Any person entitled to copyright may obtain copyright of his work by publication thereof with the notice of copyright required by the act.

The notice must appear on each copy when it is first published and shall consist of either the word "Copyright" or the abbreviation "Copr.," accompanied by the name of the copyright proprietor; if it is to be a printed literary, musical, or dramatic work, the notice shall also include the year in which the copyright was obtained by publication.

There are certain kinds of works, however, on which the notice may consist of the letter C inclosed within a circle ©, accompanied by the initials, monogram, marks, or symbol of the copyright proprietor; but even in these cases the name of the proprietor must appear on some accessible portion of the copies of the work.

If it is published without the notice of copyright appearing thereon, the presumption is that the work has been dedicated to the public and the Copyright Office will not grant a copyright registration for it. Consequently, it is extremely important that the copyright notice appear how and where the law provides.

The Copyright Office of the Library of Congress has original jurisdiction over all applications for copyright registration. Prior to July 1, 1940, the Patent Office had jurisdiction over applications for copyrighting prints and labels, but this function has been assigned to the Copyright Office so that it has complete jurisdiction over all copyright applications. The term of a copyright is 28 years from the date of first publication, and it may be renewed for another 28. Additional information can be obtained from The Copyright Office of the Library of Congress, Washington, D. C.

Patents

A patent is a grant from the United States Government securing to an inventor for a term of seventeen years the exclusive right to make, use, and vend his invention. In the matter of design patents, the term may be either 3½, 7, or 14 years. To be patented, an invention must be both novel and useful.

Generally, a patent application may be for an art or process, for a machine, for a composition of matter, for a plant, or for a design. A patent is granted only upon a regularly filed application, complete in all details, and after determination of its utility, completeness of disclosure of the invention, and the making of a search to determine its novelty.

The law provides that any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, or who has invented or discovered and asexually reproduced any distinct variety of plant, other than a tuber-propagated plant, not known or used in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, for more than one year prior to his application, and not in public use or on sale in this country for more than one year prior to his application, unless the same is proved to have been abandoned, may upon payment of fees required by law, and other due proceedings had, obtain a patent therefor.

It is advisable to apply for letters patent promptly after conception of the invention. An application must be presented in the name of the inventor, or co-inventors if there are such. However, while the application is pending, it may be assigned to someone else, to carry out actual production, for example.

A design patent may be granted to any person who has invented any new, original, and ornamental design for an article of manufacture such as, for example, a doll, or even an auto tire tread.

Methods of protection, continued

Abbreviations: May serve as a trade-mark, and as such be registered.

Advertising campaign: When described in printed literature is subject matter for copyright.

Advertisement, publication: May be copyrighted by advertiser.

Billboard posters: May be copyrighted.

Books: May be copyrighted.

Book title: May be registered as trade-mark if the book is a continuing publication with different subject matter in each edition.

Booklet: May be copyrighted.

Bottles: Subject matter for either mechanical or design patent.

Boxes: Subject matter for either mechanical or design patent.

Business name: May be registered as trade-mark if used on the goods.

Car cards: May be copyrighted.

Cartons: Either mechanical or design patent may be obtained.

Cartoons: Subject matter for copyright.

Cartoon titles: May be registered as trade-marks.

Circulars: May be copyrighted.

Copy, advertising: May be copyrighted.

Copy, editorial: May be copyrighted.

Corporate names: May be recorded at the United States Patent Office and, if used as trade-marks, they may be registered as such.

Costumes: Subject for design patent.

Diecut inventions: Either mechanical patent or design patent subject matter.

Direct mail construction: May be copyrighted by sender.

Direct mail copy: May be copyrighted.

Display, counter: May be copyrighted and may be subject matter for design patent.

Display, window: May be copyrighted and may be subject matter for design patent.

Drama, published or unpublished: Copyright subject matter.

Drawings: Copyright subject matter.

Emblems: Subject matter for design patents, if an article of manufacture.

Enclosures: May be copyrighted.

Endorsements: May be used in copyrightable matter.

Envelope construction: Subject matter for mechanical or design patent.

Fabric design: Subject for design patent.

Flags: No one may obtain any exclusive use for a flag of a country or government. Certain flags may be subject to design patent.

Folders: May be copyrighted.

Format: May be copyrighted.

Handbills: May be copyrighted.

Insignia: If manufactured article, may be subject matter for design patent.

Labels: May be copyrighted.

Layouts: May be copyrighted.

Lectures: May be copyrighted.

Magazine: May be copyrighted.

Magazine title: May be registered as a trade-mark.

Mailing piece: May be copyrighted.

Maps: May be copyrighted.

Motion pictures: May be copyrighted.

Musical work: May be copyrighted.

Newspaper: May be copyrighted.

Newspaper title: Register as trade-mark.

Oral lecture: The written text may be copyrighted.

Package construction: Subject matter for mechanical or design patent.

Package insert: May be a copyright or design patent matter.

Page, single, of copy: May be copyrighted as well as entire works.

Painting: May be copyrighted.

Pamphlet: May be copyrighted.

Personal name: May be registered as a trade-mark under certain conditions.

Personalities: For example, the Philip Morris "Johnny." As shown on label and in advertising, may be copyrighted and, if used on goods, may be registered as trade-marks.

Photograph: May be copyrighted.

Photomural: May be copyrighted.

Phrases: May be registered as trade-marks, if used on the goods.

Poster: May be copyrighted.

Print: May be copyrighted.

Radio commercial: May be copyrighted.

Radio program: May be copyrighted.

Rough sketch: Preliminary art for ad may be copyrighted.

Sermons: May be copyrighted.

Signs: May be copyrighted, design patented, or patented, depending on kind.

Slogan: May be registered as a trade-mark if used on the goods, or may be subject matter for copyright.

Speeches: May be copyrighted.

Stamps (not postal): May be copyrighted and, under certain conditions, design patented.

Talks: May be copyrighted.

Testimonials: May be copyrighted.

Theme song: May be copyrighted.

Titles of newspaper columns: May be registered as trade-marks.

Uniforms: Subject for design patent.

Watermarks: Registered as trade-marks.

Lanham trade-mark law

New statute broadens the definition of trade-mark; permits use by licensee; makes possible exclusive and incontestable rights after five years' use

Isaac W. Digges

On July 5, 1947, there became effective in the United States a new trade-mark law, known as the Lanham Act, which in important particulars differs from all previous Congressional legislation on that subject. Most important, Congress for the first time is attempting to create substantive rights in trade-marks employed in interstate commerce.

The heart of the new legislation may be found in Section 33(b) of the Act, which includes Section 15 by reference. There it is provided that the right to the exclusive use of a registered mark in interstate commerce may, under certain circumstances and with certain exceptions, become "incontestable" upon the filing of an affidavit by the registrant at the end of any five years subsequent to registration, setting forth that the mark has been in use for such a five-year period.

These sections of the Act thus draw together the registration of the mark and the acquisition of the exclusive right to use the mark in interstate channels. Previous legislation of Congress of a civil character merely attempted to give procedural advantages to the first registrant on the Federal register.

The new law clothes the user, under the circumstances and exceptions set forth in Sections 15 and 33(b), with definite property rights, by vesting him with the right of exclusive use of his mark in interstate commerce.

Previous laws repealed

The Act repeals all previous Congressional legislation on the subject of trademarks that may be inconsistent with the new law. It also adds new features of significance, both of a substantive and procedural nature. Generally speaking, those provisions that relate to rights of exclusive use are substantive in character; while those dealing with other aspects of the law are procedural.

Registers are established in the Patent Office called the "Principal Register" and the "Supplemental Register." In the Principal Register will be recorded the technical trade-marks of the classes registrable under the Acts of 1881 and 1905, and, under the circumstances referred to below, descriptive and geographical marks and surnames.

(A technical trade-mark means a distinctive mark of authenticity, consisting of a mark formed by a coined word or device which lacked prior meaning or significance in the public mind.)

Supplemental register

The new Supplemental Register will receive marks that do not meet the requirements of technical trade-marks, but that nevertheless are capable of distinguishing the goods or services of the applicant. Such a mark may be a "trade-mark, symbol, label, package, configuration of goods, name, word, slogan, phrase, surname, geographical name, numeral, or device, or any combination of any of the foregoing."

The first innovation of significance is that a descriptive, surname, or geographical mark may now be placed on the Principal Register whenever it actually has become distinctive of the applicant's goods in "commerce." Previously such marks were not considered as technical trademarks but were relegated to the 1920 statute which permitted the registration of such marks on a separate register.

Procedurally, the new Act makes provision for acceptance by the Commissioner of Patents of proof of substantially exclusive and continuous use for five years as prima facie evidence of the fact that the mark has actually become distinctive.

A second important feature will allow the registration of entirely new classes of marks not heretofore registrable. The Act also permits the setting up of separate registers for service, collective, and certification marks.

The owners of service marks and certification marks may now register them. Under the new law associations, not themselves manufacturers of goods, may hereafter register their marks; collective marks may be affixed to goods produced by their members. Slogans may be registered by their owners on the Principal Register when they are distinctive of the applicant's goods or services.

A third innovation of practical benefit will be found in the section permitting the registrant to license the use of his trade-mark to a "related company," that term embracing any person or corporation which legitimately controls or is controlled by the registrant (or applicant for registration) in respect of the nature and quality of the goods or services in connection with which the mark is used.

At present the use of a trade-mark by another than the true owner, that is, by a mere licensee, has been construed as an act undermining the owner's rights in his mark. The new law expressly permits the use of the mark by a "related company" without any deterioration in the quality of the owner's rights in his identifying symbol.

In addition to permitting the use of a mark by a "related company," the Act also permits the assignment of a mark with only that portion of the good-will of the business appertaining to that particular mark, without requiring that the entire business be transferred.

Live registers kept

Another worth-while goal of the Act is to maintain live and active registers. Thus, while the duration of registration under the Act is 20 years, the Commissioner of Patents nevertheless is empowered to cancel a mark where the owner has neglected to file with the Patent Office, during the sixth year after date of registration, an affidavit establishing that the mark is still in use or, if not in use, a reason, based on special circumstances, sufficient to excuse its non-use, and showing that no abandonment was intended.

(Abandonment means that use of the mark has been discontinued with intent not to resume its use. Failure to use the

mark for two consecutive years will be deemed prima facie evidence of abandonment, which may be rebutted by showing a good reason for nonuse in that period.)

It might be well at this point to examine briefly the provisions relating to the Supplemental Register, which is for marks in the form of words or phrases capable of distinguishing products or services, which marks are not registrable on the Principal Register.

This latter classification of marks must have been used in domestic commerce for at least a year before an application for registration will be entertained; the Commissioner may shorten the period, in respect of foreign commerce, when the applicant can show that he needs a domestic registration in order to protect his mark abroad.

Incontestability

Next is that section of the Act that may be its most important attribute, containing provisions relating to "incontestability." The term "incontestability" is a word of art and has a special and limited significance, not to be confused with the general understanding of the word in ordinary conversation.

Webster's Unabridged Dictionary (1939) defines "incontestable" as "not contestable, not to be disputed, called in question or controverted, as incontestable evidence." The word "incontestability" would mean the state of being indisputable. Strictly speaking, the use of no mark under the Act can ever become indisputable.

What is provided is that after expiration of any five-year period after registration, the registrant may file an affidavit setting forth:

1. That mark has been continuously used in "commerce" for goods or services specified in the registration;

2. That no final decision adverse to claim of ownership has been rendered; and

3. That no unfinished proceeding involving the registrant's rights is pending either in the Patent Office or the courts.

Exceptions

Under these circumstances, the registrant's right to use the mark in "commerce" cannot be contested unless it can be shown that the mark was obtained fraudulently; that it has been abandoned; that it has been assigned and is being used so as to misrepresent the source of the goods or services; that the alleged infringing use is not used as a trade-mark but is merely the use of an individual's name in his own business or the name of some one having a common interest with such individual or is merely a use to describe fairly and in good faith either the goods or geographic origin; that the mark charged as an infringement was adopted without knowledge of the registrant's prior use and has been used continuously from a date prior to publication of the registered mark; or that the mark has been, or is being used, in violation of the anti-trust laws of the United States.

The Federal Trade Commission or any one who believes he will be damaged may apply for cancellation at any time if the mark is descriptive of an article on which the patent has expired, or has been abandoned, or where registration was obtained fraudulently; is deceptive, immoral, or scandalous; consists of or comprises or simulates the flag or coat-of-arms of any state or country; consists of the name or representation of a living person, without his consent, or the name or representation of a deceased President without the consent of his widow, if alive; or has been assigned and is being used by the assignee so as to misrepresent the source of the goods. (There are a few additional grounds for cancellation of certification marks, with which this article will not deal.)

Concurrent use

A provision of the Act, relating to concurrent use, merits consideration. Concurrent registrations of the same or similar marks by different registrants are now permitted provided there was a concurrent lawful use in "commerce" prior to any of the filing dates of the applications and it is determined by the Commissioner of Patents (or a court on appeal) that the public will not be misled or deceived. When concurrent registrations are granted, the certificate of the Patent Office will carefully limit the manner or territory in which each mark is to be used.

Having considered the conditions prerequisite to the creation of an "incontestable" right to exclusive use of a mark in "commerce," we must now turn to Section 33(b) of the Act. This section accomplishes the incredible task of setting forth the grounds upon which the "incontestable" right may be contested.

Accurately read, this section means no more than that if any of the listed exceptions should be shown to exist, the registrant no longer may rely upon his certificate of registration as conclusive evidence of his exclusive right to use the mark in "commerce." This does not mean that he thereby shall have lost his own right to use the mark.

Independently of the Lanham Act, and independently of previous Federal trade-mark registration statutes, a person could always establish his exclusive right to a trade-mark by proving the existence of the facts long fundamentally accepted as giving rise to such a right.

Basic right

Prior Federal trade-mark statutes did not essentially change or eliminate that situation. They merely added to pre-existing law the proposition that under given circumstances a certificate of registration shall serve as prima facie evidence that the registrant's right to the mark exists. This is provided for in Section 33(a) of the Lanham Act.

However, Section 33(b) goes even further in that it sets up circumstances under which the registration certificate becomes conclusive evidence of the registrant's exclusive right to use the mark in "commerce." Having done so, the Act then, in effect, proclaims that under certain conditions the certificate shall not stand as "conclusive evidence of the registrant's exclusive right to use the registered mark in commerce."

But the Act does not say that he shall thereupon be debarred from establishing such exclusive right by the time-honored means long available to him without resorting to the certificate as the conclusive and ultimate evidence.

Contestability

The following, then, are those circumstances under which a certificate of registration, which would otherwise make "incontestable" the exclusive right of the registrant to use the therein described mark in "commerce," does not retain that attribute:

1. If it is shown that registrant was not entitled to registration under the Act at the time of registration, or that he obained his registration fraudulently. Similarity, "incontestability" falls if it is established that any of the conditions earlier described as essential to creation of the right did not in fact exist, or were fraudulently represented to exist.

2. If registered mark was abandoned by its registrant. (Abandonment is de-

fined in the Act as a discontinuance of use with intent not to resume. Non-use for two consecutive years is prima facie abandonment, but this presumption may be rebutted. The Act provides also that a mark has been abandoned when through any course of conduct of the registrant, including acts of omission as well as commission, it loses its significance as an indication of origin.)

3. If registered mark was assigned and is being used by the assignee, or with his permission, so as to deceive the public as to the source of the articles or services to which it is applied.

4. If person against whom the right is asserted is using, otherwise than as a mark, a truthfully descriptive term, or the name or locality, used fairly and in good faith, to describe to the public either the goods or services or a connection between them and the person or locality named.

5. The right of concurrent user is preserved, in manner described under paragraphed numbered 7 on page 60 in the Act's list of conditions necessary for "incontestability."

6. If the registered mark is being, or has been used, for the purpose of violating the anti-trust laws.

Basic laws codified

Persons acquainted with the principles of trade-mark law will have been struck by the fact that by the time the exceptions to which "incontestability" is subject are added up, the trade-mark owner has very little more by way of rights than he had before the statute, and the question may well be posed: "What good is it?"

For the most part, the "incontestability" provisions of the Act are but a codification of fundamental trade-mark law, and the registrant does not possess "incontestability" except under conditions that would usually give him a trade-mark right independent of the statute. However, codifications serve useful purposes, primarily those of crystallization and certainty.

Public acceptance

Still another aspect of certainty that is introduced by the Act goes to the very heart of trade-mark litigation. The essence of a trade-mark is its meaning in the public mind. If the public has come to accept it for what it is intended to be, i.e., the commercial signature of the owner and the identification of his wares, then it is a trade-mark and is accorded legal protection as such. Before the enactment of the Lanham Act it had been necessary for the plaintiff in the final analysis, to establish that his mark had attained such a stature.

(Of course the registration of a mark under the 1905 Act was prima facie evidence of ownership, which evidence would be enough in the absence of contrary proof to establish the plaintiff's ownership of the mark.)

Failing such proof, he fell short of establishing that his mark possessed the essential attribute of a trade-mark, and hence did not show himself to be entitled to the legal protection which he sought. He would go about such proof by showing the duration and extensiveness of his use of the mark, his large advertising expenditures, the quantity of sales, and similar facts.

However, he could never be sure as to when he had satisfactorily discharged his burden of convincing the court as to that basic issue, especially in the face of a defendant's assaults upon the credibility, weight, and effectiveness of his evidence.

Under the "incontestability" provisions of the new Act, however, that amorphous element of the registrant's case is made unnecessary if he shows five years' continuous use of the mark in "commerce" subsequent to the date of registration under the Act, the absence of any pending proceeding and of any adverse court or Patent Office decision involving his right to ownership or registration of the mark, the filing of an appropriate affidavit as to such facts with the Patent Office, and compliance with the provisions of Sections 14(c) and 33(b) of the Act, all of which facts are objectively demonstrable.

Existing marks protected

The Lanham Act specifically safeguards rights in marks acquired in good faith prior to the effective date of the Act. It also contains clauses according rights of concurrent user to marks in good faith used prior to the registration of a registered mark. These, and other indications found throughout the statute, demonstrate a legislative intent that the "incontestability" provisions shall have, in the main, a prospective rather than a retroactive effect.

"Incontestability," then, must not be thought of as a device whereby he who runs speediest to the registration window can cancel out the previously acquired rights of other trade-mark users. It is more in the nature of an instrumentality designed to enable the erection of a sound trade-mark structure wherein the bona fide originator of a mark can confidently protect against depredation the good-will factor or element which grows up around it.

Re-registration suggested

The new law contains a provision protecting all rights acquired in existing marks before July 5, 1947. A basic question, therefore, is whether one should rest on rights previously acquired, or republish under the new law. It would seem generally desirable, because of the added advantages of the Lanham Act, to republish under the new law those trade-marks that had been registered under the 1905 Act.

What should be done in each specific case is a matter to be determined by the trade-mark owner and his attorney. However, in over-all terms, it would seem to be wise to retain all rights heretofore acquired under the 1905 Act and to add to those rights the additional advantages of the 1946 Act.

Finally, attention should be paid to that section of the Act providing that registration of a mark on the Principal Register under the Act or under the Acts of 1881 or 1905 shall serve as constructive notice of the registrant's claim of ownership in the mark.

Thus, others, who subsequent to passage of the Lanham Act adopt the same mark in "commerce," even when they are acting in good faith, may nonetheless be prosecuted for infringement.

Careful search urged

As a precaution, consequently, it will be prudent to make a careful search of the Principal Register before adopting a particular mark, and once having adopted it, to take steps at once to secure registration on the Principal Register.

(This article is an excerpt of a series of articles written by the author for "Printers' Ink" magazine. For further details it is suggested the reader consult the original material or refer to "The New Trade Mark Manual," by Daphne Robert, published by the Bureau of National Affairs, Inc., Washington, D. C., in 1947. It is a handbook on the protection of trade-marks in interstate commerce and is up to the minute, including full text and analysis of the Lanham law, case citations, and a bibliography.)

1 Art and photography

2 Photo-engraving

3 Electrotypes, duplicate plates

4 Paper

5 Printing processes

6 Binding, mailing, etc.

Typography **7**

Typography

Push tab down, fold on this crease then fold upward on other crease over edge of page and insert in slot.

8 Buyers' guide, index, etc.

Thumb-dex patent 2300623
Other patents pending

Typography

429 Composition and casting methods: Eugene M. Ettenberg
434 The making of foundry type: Gerry Powell
435 Photocomposition developments: Ralph Harding
441 Reproduction proofs: James Stevenson
443 Proofreaders' Marks
444 Specifying type: Frederick W. Schmidt
446 Transparent proofs: O. F. Duensing
448 Combination font list
450 Type color and combination visualizer: Edward M. Gottschall
455 Column depth calculator: Seymour Henry Wirth
456 Character per line calculator
458 Character per pica tables
466 Rules, borders, and ornaments: Eugene de Lopatecki
470 Screened type
474 Improving readability: Charles Beckett
475 Old-fashioned type faces: Frederic Nelson Phillips, Jr.
478 Composite type face directory
522 Machine composition and casting directory: Herbert M. French

Composition and casting methods

Fundamentals of hand and automatic techniques, including descriptions of the principal machines such as Intertype, Linotype, Ludlow and Monotype

Eugene M. Ettenberg

Composition and casting

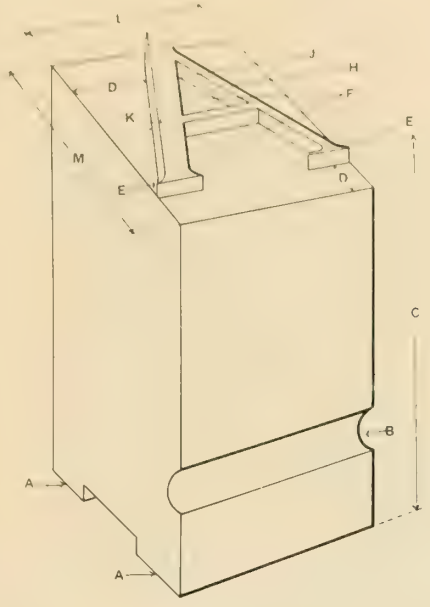
The anatomy of letters, or, as Oswald Cooper observes, their "bones," must be understood as a preface to a knowledge of the machines that make type. All type is made of an alloy of tin, antimony, and lead: 2 to 6 per cent tin to give it toughness and to cement the other metals into a common mass; 8 to 17 per cent antimony for hardness; and 77 to 90 per cent lead to give the type its body. For foundry metals, small amounts of copper or nickel are sometimes added to give greater durability.

The diagram at the right is of a foundry type character, the face of which has a nomenclature common to all classes of type.

Categories of type

All metal type cast today can be put into one of four major categories:

1. Keyboard composing and slug-casting (Linotype and Intertype).
2. Single-type composing (Monotype).
3. Hand composition (foundry or hand-set type).
4. Hand composition—slug-casting (Ludlow and the All-Purpose Linotype or A-P-L).



Key to letters left:

A. Feet. Type that is loosely spaced and leans over when printed is called "off its feet."

B. Nick. Helps compositor to place type right-side-up in stick. Keeps him from using wrong font.

C. Type high, or height to paper .918 inch or approximately 11/12 of an inch.

D. Shoulder. Nonprinting area surrounding a character.

E. Serif.

F. Counter or void.

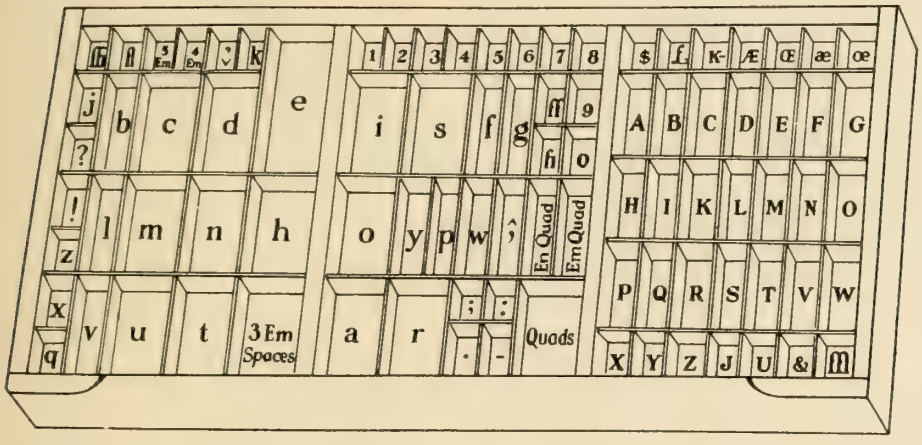
H. Thin stroke of face.

J. Thick stroke of face.

K. Neck, beard, or drive. Made in matrix while casting, rest is made in the mold.

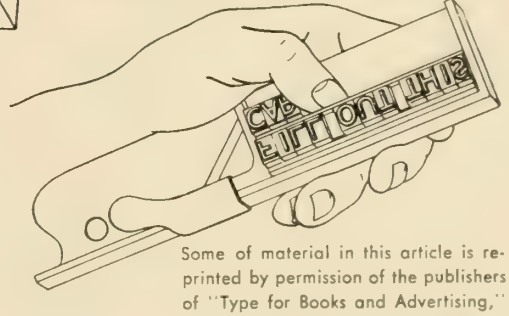
L. Set or set width.

M. Point size



California job case: In this kind of a case (above) the section on the right holds the capital letters. Lower-case letters, figures, punctuation marks, and spacing material occupy the middle and left sections. Characters are so arranged in the case that common letter combinations are close together. The size of the boxes for each character varies with the probable frequency of use of the character. The California job case is the most widely used, approximately nine-tenths of all cases being of this kind. Standard cases are 32 3/16" x 16⅝" and are interchangeable in case racks. Case racks are cabinets or stands that hold a number of cases. Although smaller size cases (two-thirds and three-quarters) are made for plants with limited space facilities, the basic layout of the case is as pictured here. Special cases are designed for foreign language and accented letters, music type, etc. Triple and quadruple cases are used for fonts of such faces as Lining Gothic, Engravers Roman, and others that consist of all capital letters. Cases such as these hold three or four such fonts.

Composing stick: The compositor or typesetter holds a composing stick (below) in his left hand, and with his right picks up the type characters one at a time and assembles them in the stick, spacing out his words with thin spaces and quads (low, nonprinting pieces of type metal). In this way, he justifies his lines, making all lines exexactly the same length called for. Modern composing sticks are about 2 inches wide by 10 inches long, are graduated to pica and half-pica settings, and have a movable metal bar or "knee" for adjusting space to the desired measure. When his stick is filled, the compositor places the lines of type in a long, shallow metal tray or galley. The galley is about 24 inches long and normally holds a total of about 20 inches of type in all



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Foundry type: In a hand composition department, the compositor stands before frames in which there are cases of type. The standard, full-sized case is divided into large and small compartments, ranging in size from the lower case "e" compartment to the size of the small boxes that hold such characters as z, x and q.

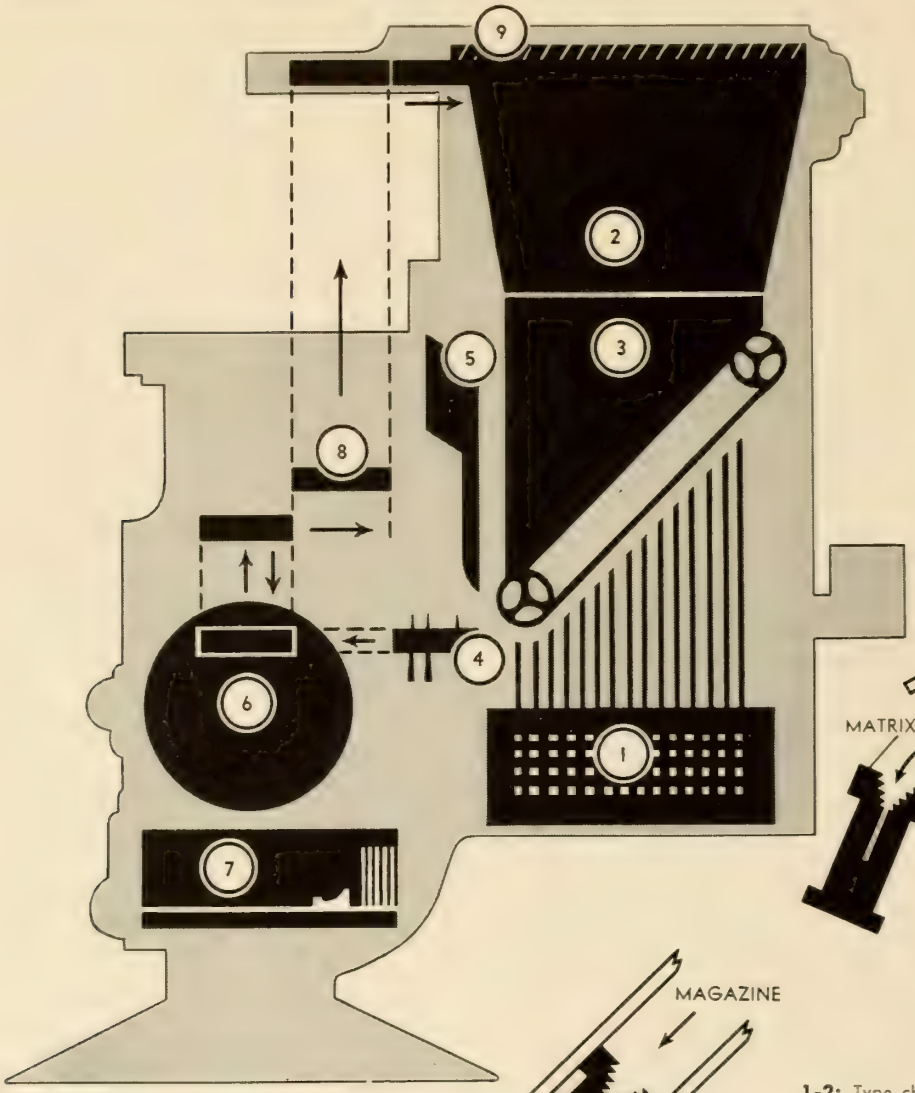
The words "upper and lower case" come from the old style cases called "news cases," where the practice was to use them in pairs. The case nearest the compositor rested on a slight slope and was for the lower case, or small letters, while the case for capital letters was at a steeper slope just above and beyond the lower case. Today, a single case, such as the California job case, holds both capitals and small letters. One such case holds as much as 45 pounds of type.

Foundry type is cast in single characters on individual bodies and is sold to printers in fonts. Proofs usually are pulled from the original type. To preserve the perfect lines of the letters and to prolong the life of the type, it is the general custom in the trade to make line cuts from reproduction proofs of the type, or to make electrotypes or stereotypes of it for printing. After the type has served its purpose for a given job, it is hand distributed to the case from which it came.

Monotype, as described on succeeding pages of this article, in addition to being single-type composed can also be used as hand type and can be hand-composed, character by character. The type itself is used for the printing or can be locked up and duplicate plates made therefrom. After the job is completed, the type can be redistributed to cases or melted down.

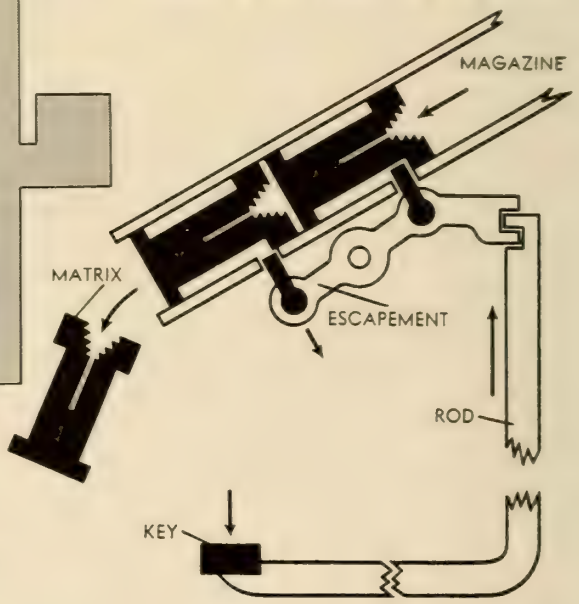
The Ludlow machine, which produces line slugs from hand-composed matrices, permits of printing from the slugs. Matrices are redistributed by hand, but after printing slugs are melted down.

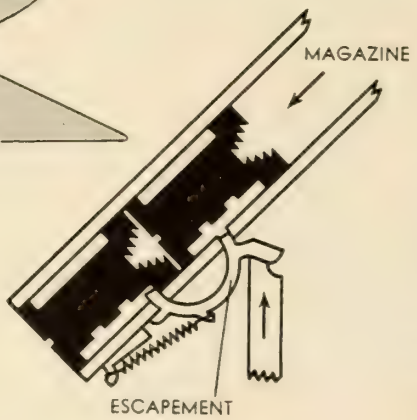
Keyboard composing and slug casting machines



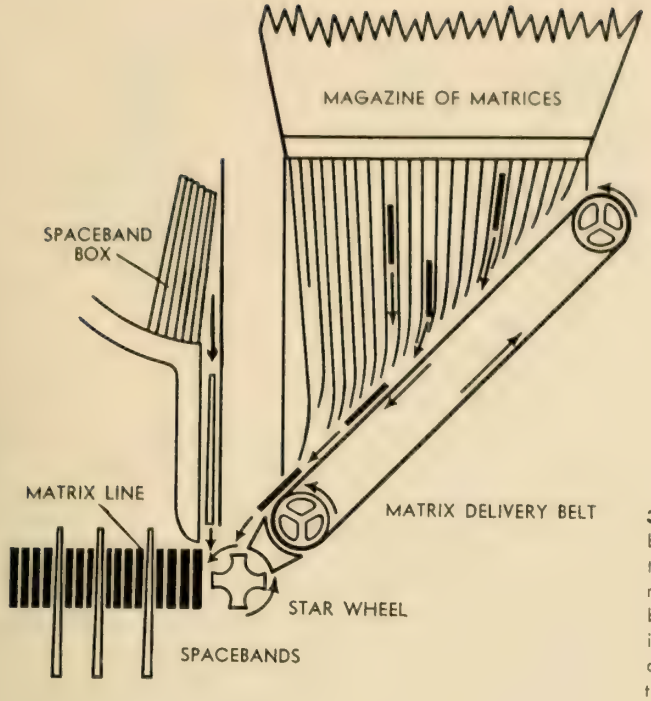
Key to numbers:
1. Keyboard.
2. Magazine.
3. Delivery channels.
4. Assembling elevator.
5. Spaceband box.
6. Casting mechanism.
7. Galley.
8. Distributing elevator.
9. Distributor.

Basic principle: The outstanding feature of Intertype and Linotype machines is that they cast lines of type or slugs. Slugs are cast from matrices punched with the various characters needed for composition. Intertype and Linotype machines carry out three basic operations in one continuous sequence: 1. Lines consisting of matrices and spacebands are assembled mechanically as the operator depresses the keys of the keyboard. 2. The lines of type or slugs are cast from the assembled lines of matrices and spacebands. 3. The matrices and spacebands are returned automatically to the chambers from which they were originally drawn. The numbers at the beginning of the captions accompanying the succeeding diagrams refer to the encircled key numbers in the diagram at left, locating the part described.



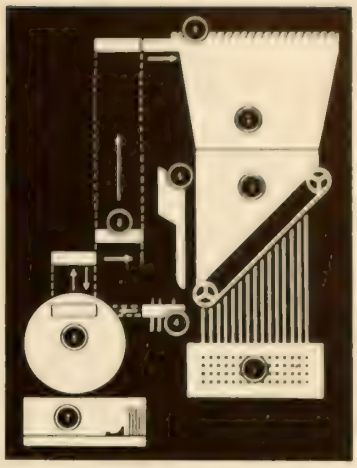


1-2: Type characters are on the sides of brass dies or matrices. The matrices for each letter or character are held in separate channels of the magazine (2), which rests in inclined position above and to rear of keyboard (1). As operator depresses keys, matrices are released from magazine by upward movement of key rods against magazine escapements. Diagram above represents action of the Linotype; that at left of the Intertype. The magazines can be removed and replaced by those containing other type faces. Some models accommodate several magazines at a time. Some magazines contain two type faces. (See Cross-Reference Subject Index for complete list of combination fonts.)

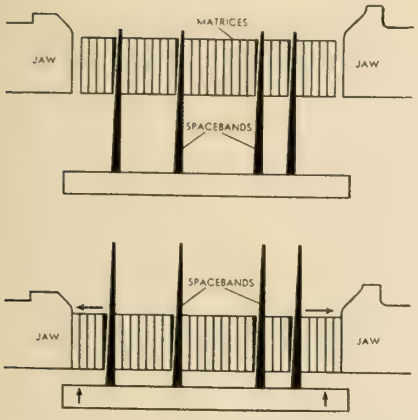


Key to numbers, right:

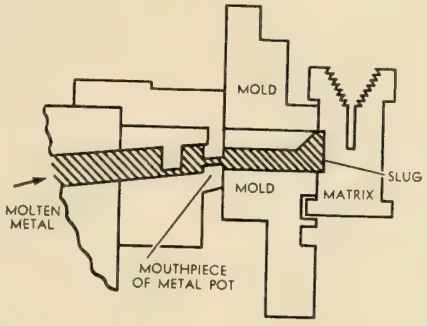
1. Keyboard.
2. Magazine.
3. Delivery channels.
4. Assembling elevator.
5. Spaceband box.
6. Casting mechanism.
7. Galley.
8. Distributing elevator.
9. Distributor.



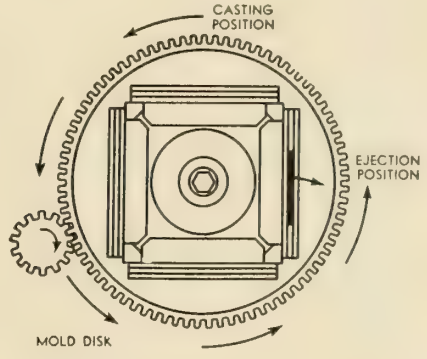
3-4: At left, the released matrices slide down channels (3) onto delivery belt, which carries them to visible assembling elevator (4). The relative distances between the matrix channels and the delivery belt are such that the matrices reach the assembling elevator in the same order in which the keyboard keys are depressed. The matrix line in the lower left corner of the illustration is in the assembling elevator, which is situated on the machine at the point where the delivery lines of matrices and spacebands converge, the spacebands dropping down from above the feeding end of matrix line.

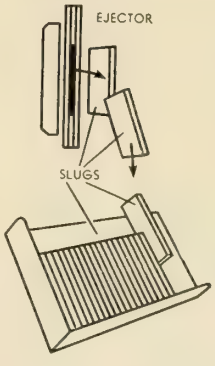


5: Since spacebands (above) can be used with any type face or size, they are stored in a box (5) above the assembling elevator. As each matrix word group is assembled, the operator depresses the spaceband key. Each time the key is depressed, a spaceband is released and drops into the assembling elevator (4). Spacebands serve two basic purposes: 1. They separate the groups of matrices that form the words. 2. They justify (spread out) the lines to the length for which the vice jaws are set. A spaceband consists of a short sleeve and a long wedge, the inner surfaces of which are tapered. Spacebands are so constructed that when the long wedges are driven upward during justification, the matrix line is spread out until the space between the vice jaws is filled. Spacebands take up a slack of one to three ems, depending on the length of the assembled line. Although the spacebands and matrices are dropped into place in the assembling elevator, actual justification takes place when the line is at casting position at the mold wheel. There, a rod from underneath presses the spacebands upward between words until line is firmly spaced.

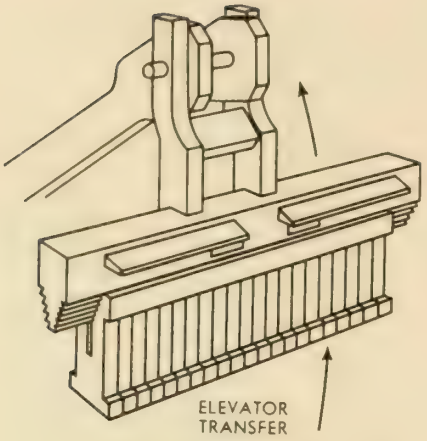


6. When the operator has assembled the line of matrices and spacebands, he raises it to the delivery slide. The slide carries the line to the left, to the casting mechanism (6 and above) and then returns to its normal position, ready to receive the next assembled line. The line of matrices and spacebands is carried to position in front of the mold (6). The matrices are positioned so that their punched characters align with the front opening of the mold. The back of the mold aligns with the mouthpiece of the metal pot, which is filled with molten type metal. In preparation for the casting of the slug, the line of matrices is justified or spread out to the length provided between the vise jaws (as described in column at left). The matrices are then aligned vertically and face-wise in relation to the mold. The metal pot containing the molten lead is situated behind the mold wheel and is heated by electricity or gas. The metal pot now locks against the back of the mold and the pot pump plunger forces molten type metal forward into the mold cavity. The metal thereby forms a solid slug, bearing a line of type reproduced from the punched characters of the matrices. The slugs so formed are printed from directly, or are locked up with original engravings for the molding of electrotypes. After use, slugs are melted down.

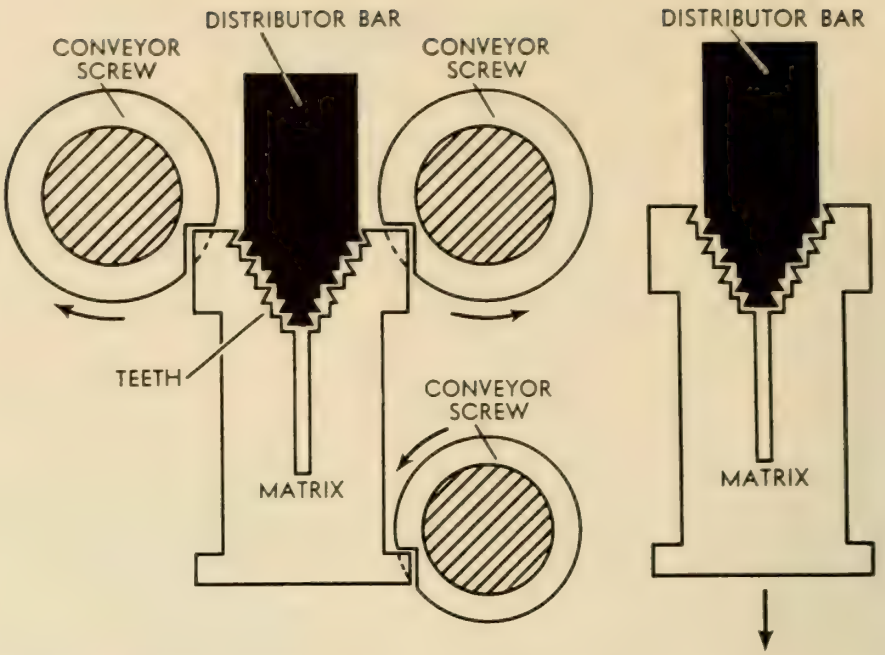




7: The mold then turns the slug from the casting to the ejecting position. Before the slug is ejected, its base is trimmed to type height. While the slug is being ejected, two parallel knives trim it to the correct thickness. The more accurate the trimming the less the likelihood of work-ups when printing. Then the slug slides into the galley (7) at the front of the machine. Each successive slug is stacked to the right of the preceding ones in regular column formation. The whole casting operation is automatic, with seven lines being cast each minute. In case of a typographical error, the entire line can be quickly reset and recast, and inserted manually in the proper place in the galley or form, with the line containing the error being thrown away. The metal pot is supplied by lead pig that is fed automatically.



8: While the slug is being trimmed and ejected, the matrices and spacebands from which the slug was cast are being returned to their point of origin. The line is raised to the transfer channel, at which point the matrices are transferred to the second, or distributing, elevator (8). While the second elevator is raising the matrices to the distributing mechanism at the top of the machine, the spacebands are returned to their box (5). The second elevator consists of a series of notches or steps that are the counterpart of the teeth on the upper part of the matrices. The elevator slides into the line of matrices from the end of the line and by dovetailing with the teeth of the matrices, grips the matrices fast, raises them up.



9: A mechanical arm pushes the matrices one by one into the distributor, which is above the magazine. The matrices are supported by their teeth on the distributor bar, in which various combinations of teeth are cut. They are moved along the bar by three revolving screws (pictured above left) which engage the projecting matrix lugs. When the matrix reaches a point directly over its channel in the magazine, there is a gap in the teeth of the distributor bar corresponding to the combination of teeth cut in the matrix (pictured above right). The matrix, thus released, drops into its channel entrance, then slides back down into its correct channel in the magazine.

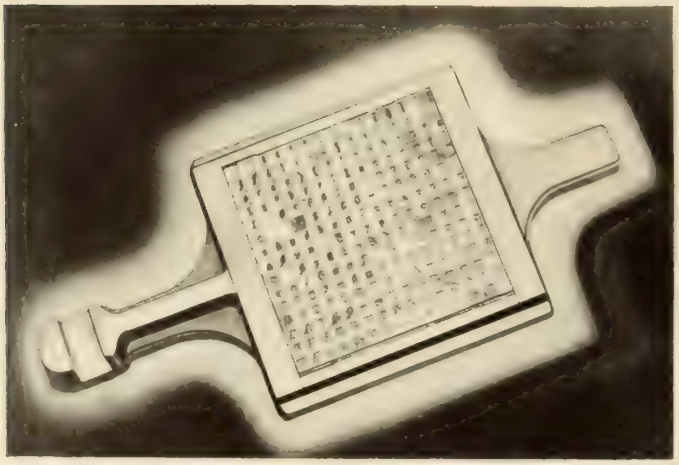
Single type composing and casting

Basic principle: The Monotype, as its name implies, casts single characters rather than line slugs. The Monotype is really two machines, a composition keyboard and a type caster. The operator of the keyboard, by tapping the keys, perforates a strip of paper called the ribbon, which passes from one spool to another as the machine is operated. When completed the ribbon looks very much like a player-piano roll.

This paper roll is then fed into the caster, which is primarily a receptacle for molten metal. The punched holes on this ribbon dictate the action of the casting apparatus, shifting the set of matrices in a matrix case or die case four ways: backward, forward, and sideways. Each shift presents the face of a different matrix or die to the mouth of the mold, where the letters are cast one character at a time, at a speed of something like 200 or more pieces of type per minute.

A set of matrices in a matrix case is pictured at left below. The operator of the keyboard perforator, pictured at right below, perforates the tape without regard to the style of type face being used, as the matrix cases are readily interchangeable in the caster.

The individual letters come out of the mold onto a galley correctly composed in lines. Spaces that had been indicated on the ribbon by the operator are cast at the same time as the type, making justification of the lines automatic. The caster, pictured on following page, can also be used to cast Monotype sorts, or a number of letters and characters that





Single type composing and casting, continued

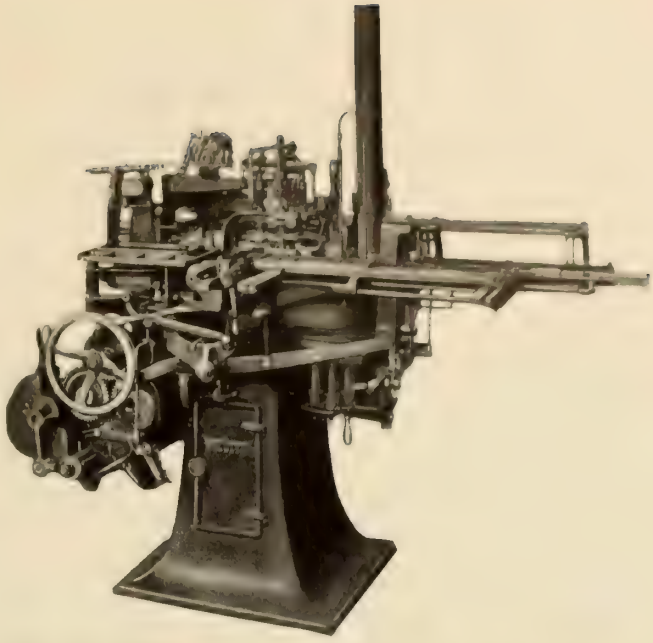
can be sorted into a type case and when needed, hand composed much in the same manner as that followed in setting foundry type.

The machine sets type in measures up to 60 picas wide, in sizes from 4 to 18 points, while the Display Type attachment enables the machines to cast up to 36-point type. The Giant Caster, in turn, casts up to 72-point type. Type faces up to and including 18 points case be composed and cast in the Monotype system, but display type larger than 18 points, while cast in sizes up to 72 points, must be hand composed.

Although individual pieces of metal are produced for each character and each space in 18 points or smaller, the type is composed in lines and justified to any width. The justification is automatic. As each line is cast, the desired spaces are cast with it. The spacing required to justify each line is recorded on the perforated ribbon, which activates the caster accordingly.

The material-making Monotype casts rules from 1½ to 12 points in continuous strips, and leads from 1½ to 6 points. The Monotype is used extensively for book and commercial text composition, tariff work, and intricate tabular matter. It is shown to best advantage where many changes are expected after type has once been set.

When an error is made in Monotype-composed matter, corrections can be made by hand from a case of Monotype characters of the same face previously cast for that purpose. As a consequence, Monotype composition is well adapted to such jobs as time tables, stock quotations, price lists, and the like, as well as straight matter. Corrections in intricate tables can thus be made with ease without the necessity of resetting whole lines.



Monotype caster

Hand composition and slug casting

The Ludlow is a slug-casting machine that is a combination of hand work and a mechanical process. Brass matrices, which are incised with a type character, are assembled by hand and placed in a stick which is quite different from that used by the hand compositor. It consists of a steel frame with a locking screw at one end to hold the Ludlow mats and spaces in place.

When these mats are spaced to the required length, the locking screw is tightened and the stick is placed over the open slot of the Ludlow machine; molten metal is forced up through the slot against the matrices, and a T-section slug is ejected. The matrices are then hand distributed back into the cases.

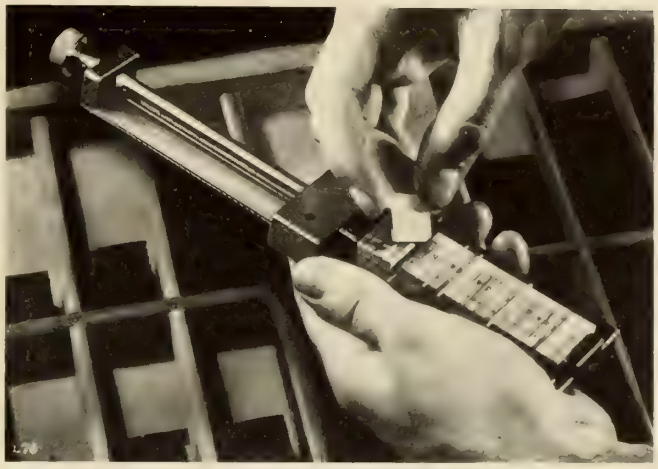
The Ludlow stick is pictured in center at the right. Pictured below it is the Ludlow caster and cabinets, which hold cases of Ludlow matrices. The Ludlow can cast lines from 6 to 144-points in size.

While the Ludlow meets the display requirements of newspapers, publishing plants, and composing rooms, the development of smaller type sizes, lining type faces, and rule form matrices has broadened its scope to include that large volume of composition best set by hand. It is particularly useful where a wide variety of type sizes and styles is needed, but only a few lines of each desired.

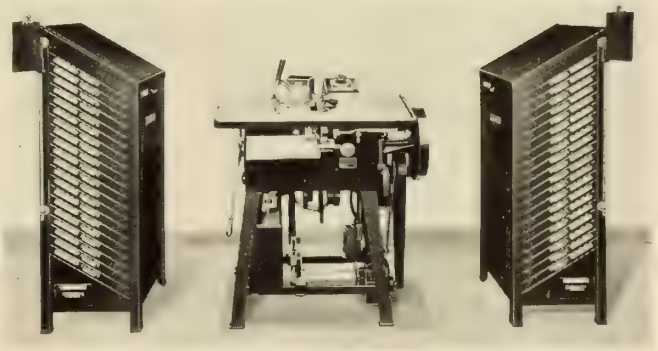
Another of its uses is when display forms or lines must be set several up. For this type of work, it is necessary to set the line only once. It is then a simple and rapid procedure to cast as many multiples of the line as are required.

Justification of the lines is a manual process, the composition being by hand, and the necessary spacing is hand inserted.

Whatever their face size, type lines may be cast on the Ludlow without mold, magazine, or other machine changes, since the face size variation is provided for by an overhang cast in the face recess of the matrices themselves. Smaller type faces, such as 6 point, have a large overhang in the matrices. Larger faces have proportionately smaller overhangs. But regardless of type size, the overhangs make all matrices of the same length so that they all can be molded from without necessitating any special adjustments of the machine for this purpose.



Ludlow composing stick



Ludlow caster and cabinets

All-purpose-linotype

The A-P-L (All-Purpose-Linotype) is made by the Mergenthaler Linotype Company and is similar to the Ludlow in that the matrices are also set by hand from a case. The machine itself is very much the same as the casting part of the regular Linotype except that the slugs, because of their sizes, are ejected into a water-cooled compartment before dropping into a galley.

The A-P-L, in addition, has a metal cutting saw to make possible the assembling of complete forms on its working top. The molds are 42 picas long, longer lines are butted together. It can cast from 6 to 144-point.

The making of foundry type

Care and precision are vital in process that comprises photographing the design, tracing and cutting of the pattern, engraving, casting, and ejecting

Gerry Powell



1. Photographing: Production of a new type face usually starts with the formulation of a new concept by the typographic director who turns the net result over to an artist. The first step in translating the finally approved design into metal type is the photographing of the drawing. To avoid distortion, the characters are photographed one at a time on the center portion of the film.



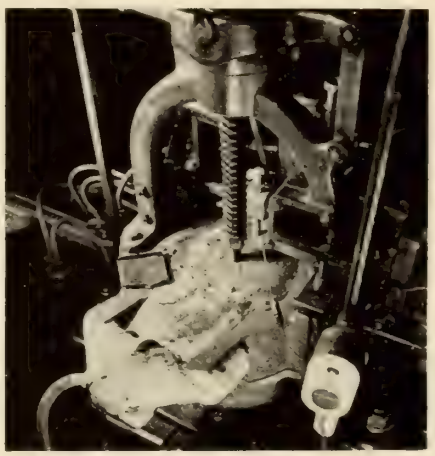
2. Tracing: Each image is then blown up on a special enlarger to approximately 10" in height and carefully traced to make a pattern drawing in which all dimensions are kept in proportion and checked for accuracy before cutting is done.



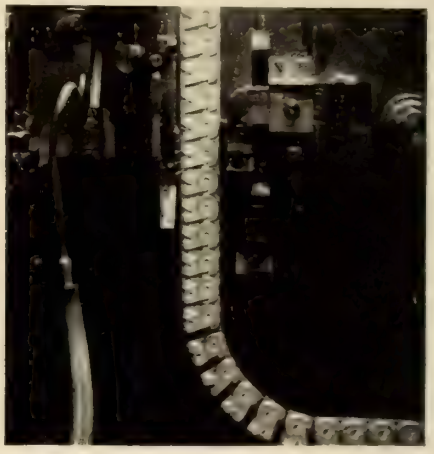
3. Pattern cutting: Next, the operator of a Gorton engraving machine painstakingly guides a follower along the outline of the pattern drawing. This action causes an engraving tool to duplicate his movements in reduced scale, thereby cutting an individual brass pattern of each character which serves as a permanent guide for the matrix engravers. The matrix is ready for engraving.



4. Engraving: The nickel-brass matrix is engraved on the Benton engraving machine which repeats in greatly reduced ratio each movement of the operator's hand. As the operator traces the pattern's outline, a rapidly revolving engraving tool, supported in a heavy ball-bearing mounted "quill," cuts into the face of matrix with infinite precision. The matrix is then checked with precise instruments to be sure that all points on the engraved surface are within .0005" of type high for best printing results.



5. Casting: The matrix, after passing a number of precision tests, is given a light coating of chrome to prepare it for casting. Casting machines have thermostatically controlled electrodes to provide a high even temperature. Great pressure forces the molten metal into a heavily constructed water-cooled mold which can be used for but one size of type. Type is then ejected.



6. Ejecting: As type is ejected from the mold, its jet is broken off automatically. Then it is carried past a series of knives which groove its feet, trim its edges, and kern its overhangs. Before fonting, the type is checked again for smooth face, accurate body and proper alignment. Then it is waxed and packaged ready for shipping.

Photocomposition developments

Many trick effects in type and lettering styles are available for display work as several machines for phototextyping are nearing commercial stage

Ralph Harding

A number of photocomposition machines have been in use for some time, but only comparatively recently has considerable progress been made in the development and perfection of such devices for handling large quantities of material, such as book texts and the like.

Earlier machines were primarily for display sizes of type, later ones for text, and some for both. In addition to composing type lines, some machines can distort or alter the sizes and shapes of the lines to obtain a variety of unusual and attractive effects.

Photocomposition of mass bulky text matter is adaptable to any kind of printing—be it letterpress, photolithography, gravure, or collotype. It is particularly advantageous in offset printing from original image characters, in view of the recent trend toward producing more books, especially juveniles, by the offset method of printing.

The major advantages of photocomposition for the lithographic industry include the elimination of the pulling of reproduction proofs from metal type, as well as the entire photographic step necessary to transform the repro proof into a negative or positive. Another major advantage claimed is the complete elimination of metal, its heating, casting, handling, and storing.

It also is claimed that type reproduced photographically from perfect basic copy within the machine is sharper and more accurate because the by-passing of additional photographic processes reduces the possibility of loss of fidelity.

The speed of composition is limited only by the operator's ability. Present typesetting machines are limited by the time required for hot metal to set—about 180 characters of 6-point type a minute. Through photographic composition, this rate is increased greatly, with exposure times of 1/60th of a second or less for each character. There is, however, the fact that the resultant film must be developed and fixed after exposure in the photocomposing machine.

It also has been found that the making of corrections is a little cumbersome in some of the processes being developed. Each character, word, line, or paragraph to be corrected in a negative film must be cut out and the correct replacement rephotographed and spliced in; or, in the case of a paper positive, a piece of paper bearing the corrected matter must be pasted over the part containing the error.

As far as expense to the advertising buyer is concerned, various manufacturers report that photocomposition machine production is about equal to conventional type composition in cost, and actually is more economical when the savings in time and processing are considered.

Ten photocomposition machines have been developed for text work, of which three are fairly close to production for consumer use, while a fourth exists only as a completed working model, with no production planned for the near future. Two of the ten are adaptable for direct reproduction of display sizes of type but cannot perform any tricks with the faces. A number of others of this kind of display machines also may be used for general photolettering. Still other machines are devoted solely to the photolettering phase of the work.

Because display and general photolettering systems are so well known, this article is limited to discussion of the newest development: phototext-typing machines. Illustrations of the many styles of lettering and techniques that can be employed in photodisplay composition are on pages 438 to 440.

Phototextype

Perfected by the Huebner Laboratories, this machine can be operated by the regular line-composing keyboard, by a Monotype keyboard, or by a typewriter. The Phototextype machine produces type matter in many faces from 4-point to large display and in lines up to 19 inches long, in negative film form already photographed and ready for the final step of transformation by vacuum printing to a regular lithographic plate.

The operator can be given complete page dummies, or advertising or other layouts showing details on type or display lines, and the Phototextype machine will produce complete pages in the form of the photographic film just described. Proofs are obtained by making photoprints.

The type characters are arranged in a circle on a master square flat plate. In the camera is mounted roll film up to 20 inches wide and 200 feet long or, if preferred, sensitized glass plate.

The type characters originally are drawn about seven inches high, then photographed down to fit a master negative that may contain one to three fonts —a plate that can be interchanged easily with plates of other fonts in half a minute. An automatic mechanism calculates the space for each line in advance. When the operator touches a key, the corresponding character is not photographed on the film immediately, but is "stored up" by an electrical selector system until the complete line has been composed.

An automatic calculating scale indicates to the operator how much the spaces between words must be reduced or expanded to justify; a single key to advance or retard spacing controls the exact justification. The operator then depresses a key that starts the camera exposing the letters automatically one by one on sensitized film, which is moved horizontally, character by character, and also is shifted vertically in proper line spacing. While this is taking place, the operator composes the next line.

The type characters may be in either negative or positive form on a transparent supporting base. Behind each character on the plate, a light source is mounted, while on the face of the plate is a solenoid-operated shutter for each character.

The Huebner Phototextype machine also contains a precise measuring device, position indicator, and precision cut-off for any format requirements. Phototextype has superseded the earlier Film-O-Type process, which also was developed by the Huebner Laboratories.

The Huebner machine now is in test operation in an experimental plant in the Middle West, but as of this writing this device was not being made available through commercial channels.

Intertype 'Fotosetter'

This machine, developed by the Intertype Corporation, employs assembling and distributing systems similar to the standard hot-metal line-composing machine, with circulating matrix. The matrix in the Intertype phototypesetting machine is identical in form and outline with that of the conventional hot-metal machine. However, instead of the usual casting cell, a round aperture is cut in the matrix body, in which is mounted a film with a character in negative form.

The keyboard operation is identical with that of the hot-metal machine, the matrices dropping in the usual fashion. After a line has been filed and justified, the matrices are raised one at a time in a channel into position before the camera lens, where they automatically are aligned and the film exposed. The film is moved automatically in conjunction with the raising of each new matrix.

After exposure, each matrix is moved vertically to the transfer position, and pushed horizontally until the teeth are engaged with the rails of the second elevator bar. When the entire line of characters has been photographed and the matrices transferred to the second elevator bar, they are raised to the distributor, from which they are sorted in the conventional hot-metal method.

The Fotosetter is in experimental operation at the U. S. Government Printing Office, and the process has already been used to set up the program for the exhibition of "Books by Offset" and the program for the annual convention of the Natl. Ass'n of Photo-lithographers.

Highton phototypesetter

This machine, developed by Alex G. Highton, differs from the others in two major respects: the type matter is composed on a ribbon tape in a method similar to that of the Monotype; and the characters are mounted on the rim of a wheel or disk that revolves at a speed adjusted for photographic operation, the characters being photographed individually while the wheel is in motion.

The perforated tape, when inserted in the photographing machine, operates in such a way as to synchronize the movements of the wheel bearing the type characters, the optical system, the flashing of the stroboscopic light, and of the film or paper. The point size of the type is determined by the setting of the lenses in the optical projection system that carries the image of the character to the sensitized surface.

The mechanism that controls the movement of the sensitized film or paper for character widths is adjusted for each setting of the lenses.

The product of the machine is a photograph of characters assembled in any form desired, and can be used in exactly the same way as a proof of type matter is used by the offset-lithographer, the photo-engraver, etc. If desired, the composition can be photographed in reverse on film for use as a negative.

Mr. Highton is filing another patent application on another method having the same basic principle of photographing while the master character is in motion, but using functions and details already well known in the typesetting and composing fields, but details had not yet been made available to the industry.

Rutherford

For both text and display type, this machine handles composition from 2- to 192-point, using master alphabets on glass plates that are semi-automatically controlled in their travel under the lens of a precision camera. The letters are photographed singly on film, sensitized paper, or dry plate.

Film can be used to make offset press plates, zinc line cuts, steel and copper intaglio plates, or gravure cylinders. Lines are justified automatically by spacing characters as lines are set.

The Rutherford machine can condense, enlarge, stretch horizontally or vertically, screen type, slant it, etc., simply by changing the lens. It is made by the Rutherford Machinery Division of Sun Chemical Corporation, New York.

Westover phototypograph

This machine features a perforated paper ribbon that may be used on either the Monotype caster to compose type in justified lines or to photograph the individual characters in justified lines on strips of film or transparent slugs.

The strips, each of which contains a single line of type, are projected in a paging unit into galleys or pages, and are projected one by one onto the sensitized plate or cylinder. Variations in type size and in leading can be obtained in the paging unit. Corrections on film are made by "setting" new strips, removing the originals from pegs on which they are aligned, and putting the corrected strips in their place.

When transparent slugs are used, a flat chase replaces the rotary paging unit, and the locked-up page is photographed like a transparency. This machine was invented by George Westover of the Monotype Corporation, London, England, and is patented in that country and in the United States.

Photolettering

The photolettering of display lines has been perfected to such a degree that a great range of faces can now be supplied rapidly and economically. Conventional faces such as gothics, oldstyles, etc., as well as many lettering styles not available in type form are produced by many photoletterers today. Further more, an almost endless variety of photographic tricks can be performed on whatever face is selected.

For example, a headline may be set up in a distinctive script. That line can then be slanted to almost any degree forward or backward; it can be stretched in one dimension only; it can be screened, curved, shadowed, given a pattern, thickened, thinned, etc. Furthermore, all these photographic tricks can be applied not only to the type line but to the whole ad. to an illustration. etc.

Original master alphabets used by photoletterers are designed and executed by hand. These are photographed and kept in stock ready for reproduction in an infinite variety of shapes, weights, sizes, etc. While a great variety of stunt effects, for example, a bas-relief, can be produced by this process, it is most widely used at present to obtain the effects shown on the accompanying pages, produced by the Flexo-lettering process.

The page with the word "Deadline" illustrates just a few of the widely used variations obtainable photographically from one basic alphabet. The other pages give some idea of the variety of conventional and special purpose lettering styles readily available.

This service ranges in cost between hand lettering and hand composition. A rough tissue tracing indicating general lettering styles, size and position, etc., is usually sufficient. The average job can be completed in a few hours. The client is furnished with a glossy positive or negative print which is suitable for reproduction by any process he desires.

Take a Letter, Darling — JAMES CAGNEY — DeHAVILLAND — ORSON WELLES

One Fourth of America's Armed Forces.. Sent Yeast!

A NEW and QUICK FLEISCHMANN'S DRY YEAST

YOUR SCOUT SON DESERVES A MERRY CHRISTMAS

Beloved by brides

CITIZEN KANE

Special Wartime Recipes

FOR THOSE WHO TAKE YEAST... FOR THOSE WHO BAKE AT HOME..

Lovely Lady — Look your loveliest always

THE BICYCLE BUILT-IN-TWO

Jacquard nightshirt

Give the gift with the "Happy Blending"

HERE'S THE STORY THAT EVERY PERSON WHO SELLS FOOD SHOULD KNOW BY HEART!

..built by Combustion Engineering

WHAT IS MACHINERY'S No.1 ESSENTIAL?

ONE WAY TO SPEED UP PRODUCTION

Stewart Dry Goods Co.

JAMES CAGNEY DeHAVILLAND

PROFITS ARE IN THE BAG WITH SECURITY

FOR THE PRICE OF ONE!

Centuries of Hospitality

Just in for Christmas

YOUNG AMERICA

VANILLA-BLACK RASPBERRY ICE CREAM

Do You Agree That Chase & Sanborn's NEW Coffee Is The Best You Ever Tasted?

Lady, take the Chair!

Chase & Sanborn's NEW COFFEE is better than the coffee we've been using!"

AMERICA'S LOWEST-PRICED CAR

50¢ pkg. makes 32 qts. OD-30 solution

FLEISCHMANN'S FRESH YEAST—

How do you feel about Slacks?

Queen OF THE Silver Screen

OLD SCHENLEY

our SINCLAIR-ize SERVICE SAVES WEAR ON

CIVIL AIR PATROL

CARLOADS TO WISCONSIN!

Incomparable Service!

WISSCO WIRE BY WICKWIRE SPENCER

Variety Puts It Across!

He welcomes you to "The St. Regis"

How Plain Gelatine Gives Appetite-Appeal and Variation to the U.S. Nutrition Program

Mido-beautiful and waterproof

FLEISCHMANN'S DRY YEAST HAS GONE TO WAR!

Lisbeth gives holiday glamour

CHARLIE McCARTHY is phoning thousands of homes NOW!

BING CROSBY

How to be an "Expert" on Vitamins

GIVE THE GIFT WITH THE "HAPPY BLENDING"

W.T. Grant Co.

Television Today

Startling Ignorance About Vitamins

As advertised in SATURDAY EVENING POST COLLIERS · LIFE · LIBERTY and AMERICAN magazines

The Big Break

A SOLUTION TO YOUR LETTERING PROBLEMS

In response to the constant demand for new literature illustrating the Flexo-Lettering process, we have just published our latest and most comprehensive catalog to-date. It contains our complete collection of modern script and display faces, plus several hundred amazing photographic effects.

It's FREE! SEND FOR YOUR COPY TODAY!

Flexo-Lettering

A PHOTOGRAPHIC PROCESS OF LETTERING

34 W. 46th ST. • NEW YORK 19, N.Y.
LOngacre 5-1412 LOngacre 5-1413

Cream
You a
R-MISS
in User?
Story
of service
Christmas
panions
Skin

It's a Majestic Fashion

Someone is Calling You

Sparkle for your Boudoir

Centuries of Hospitality

Be Elegant in Calfskin

From a snow queen for

New Symbols of Efficiency

Finest California Wines

Stewart Dry Goods Co.

Buy a Crown for Mother

Toiletries for Gentlemen

Television today and

How about Slacks?

A Christmas Holiday

The First National Hook-up

Lisbeth's holiday glamour

New Holiday Salads

Selling the ladies is not easy

Beloved by brides for

Nylon and Cordura

Birthday Specials on

Just in for Christmas

Blossom Deodorant Cream

the "Good Old Tunes"

DEADLINE

All variations shown on this page have been made from the original line. However, these same variations or hundreds of others can be applied to other type. Each lettering set is unique.

DEADLINE
DEADLINE
DEADLINE
DEADLINE
DEADLINE
DEADLINE
★
DEADLINE
DEADLINE
DEADLINE
DEADLINE
DEADLINE
DEADLINE

DEADLINE
DEADLINE
DEADLINE
DEADLINE
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★
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The Theory about Vitamins!

REGENT CIGARETTES ARE TOPS!

I like to shop at Grants

Beauty demands lovely skin!

THE ROMANCE IN YOUR ARMS

IO FAMILIES WILL BE OUT

Good old fashioned baked beans

CHAMPION WEED TIRE CHAINS

Shamrock Suits and Jackets

Sold and serviced by your

ALEXANDERS COAT CLEARANCE

CURVES AND CIRCLES

STORE REOPENING SALE

CARLOADS FOR WISCONSIN!

SUMCO PRODUCTS ARE NOW READY

This is the age of Steel

Will Not Defat the Skin

To War Bond Purchases ★

COOLED BY REFRIGERATION

NEWS FIT TO PRINT

FOR WINTER PROTECTION

TRAIL OF THE LONESOME PINE

HAVE MONEY TO BURN

SAY IT WITH FLOWERS

BOMBSHELL OF VALUES

GIGANTIC DRAPERY SALE

A WALK IN THE SUN

MEN LOVE ACTION!

Gifts for Christmas

BACK FROM THE BATTLE FRONTS

A SWELL CHICKEN SOUP

How to change a tire at night..safely

WHERE DO WE GO FROM HERE?

Soothing for baby's tender skin

THE ATOMIC AGE HAS ARRIVED!

TRY THIS GRAND RECIPE

YOU'VE BEEN WAITING FOR

Perennial Sensation of America

Reproduction proofs

Good proofs should be dry, neither over- nor under-inked, and on good stock; they should be pulled from locked forms and have even impression

James Stevenson

Reproduction proofs of type matter for use in photo-lithography, gravure, or even in letterpress printing have improved in quality as newer and better proof presses and proofing techniques have been developed. Production men should demand perfect reproduction proofs and not accept those of inferior quality that occasionally are supplied even today.

Technical improvements in all printing processes have reduced the importance of the consideration of which type face is suitable for a given process and have increased the importance of the quality of the proof. The proof, in many jobs, is the equivalent of a photograph or a piece of art copy. The camera man in the lithographic or photo-engraving plant can do little to improve the quality of a poor proof.

Proofs for reproduction purposes should be opaque black, yet not so overinked that the edges of the letters get fuzzy or the fine lines are lost or filled in. The type character should be sharp and distinct in the proof, if it is to be sharp and distinct in the reproduction. Toward this end, several precautions should be observed.

The type form should be clean before proofing. Specks of dust or metal on the form generally cause some letters to be imperfectly proofed. The form should be locked in a chase; merely tying it with string is inadvisable. An improperly locked-up form will have poorly joined rules and type or slugs off their feet, and the form as a whole will not be perfectly squared.

Reproductions of type faces in platemaking will tend to minimize certain defects of the proof, such as fuzziness, but may cause certain letters to close up. If a proof is to be reduced, it would be wise either to view it through a reducing glass or to make a stat of the proof down to size for better visualization purposes.

Of course, the quality of the proof depends greatly upon the make-ready, the impression used, the amount of ink employed, etc. These elements, while not under the direct control of the buyer of printing, are under his control to this extent: The buyer can deal with a supplier who has the equipment, know-how, and personnel to do the sort of job required. The buyer should develop a judgment as to what is a good proof for reproduction and what is not.

Since the proof is actually copy for the camera man, both the quality of the paper and the sharpness of the impression are important. Opinions differ as to the best grade of paper to use. Some critical production men prefer proofs on transparent material for best results. Others prefer a highly coated paper. Others claim that the high gloss paper photographs badly and that a dullcoated paper is better. Still others prefer an uncoated sheet, while some say a coated with a bluish cast is best because the sheet will more easily drop out of the picture since the blue will not photograph.

The proof must be dry. A wet sheet or a proof handled with moist hands may result in blurs on the copy. Slipsheeting the proofs helps but blurs may still exist. Heat drying often is used, but care should be taken so that the proofs will not tend to wrinkle or curl.

To a limited extent, reproduction proofs that are less than perfect can be retouched. Large letters and sans serif letters are the easiest to clean up if necessary, but smaller letters and type faces with delicate lines and serifs are difficult to retouch. In such instances, it would be best to get new proofs and to make sure that the fault was in the proofing and not in the type itself. In some cases, the proof can be photographically enlarged and thereby more easily retouched.

The accompanying illustrations demonstrate some of the more common faults both in reproduction proofs and in typed matter that is to be used as copy for reproduction. Some of the defects are obvious and exaggerated, but they illustrate what the buyer of printing should in general look for in examining a proof.



Poor proof: Even proofs that are good when supplied can become smudged and dirty in handling. Before pasting up for reproduction inspect proofs with magnifying glass. Be sure they are clean and dry.



Good proof: Observe that the paragraph reproduced from the good proof not only has sharper, cleaner fine lines on each letter but that the overall visual effect is much crisper, more attractive, and more legible.

to process inks and in some cases it is deemed advisable to keep on hand green, orange, and purple because some ink makers can make these three colors higher in chroma than they can be mixed so far as gloss inks are concerned.

In the matter of inks for mixing, those inks which meet the requirements for process printing will also meet the requirements for mixtures to be used on book papers. Since process inks are used on coated, calendered and other book papers, naturally any mixture would work just about the same. driers must be adjusted in

Galley proof: All four examples of the above copy were proofed from the same 10-point Garamond Linotype slugs. The above was proofed on cradle proof press. Light, heavy places are due to uneven impression.

to process inks and in some cases it is deemed advisable to keep on hand green, orange, and purple because some ink makers can make these three colors higher in chroma than they can be mixed so far as gloss inks are concerned.

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Insufficient impression: Proofed on a No. 3 hand-power Vandercook Proof Press, the above was correctly inked, the rollers properly set, etc. The broken letters are a result of insufficient impression being employed.

to process inks and in some cases it is deemed advisable to keep on hand green, orange, and purple because some ink makers can make these three colors higher in chroma than they can be mixed so far as gloss inks are concerned.

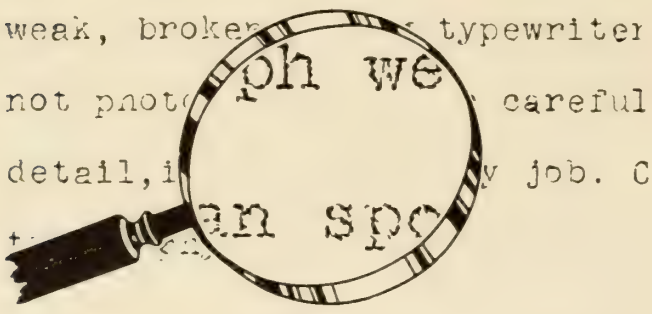
In the matter of inks for mixing, those inks which meet the requirements for process printing will also meet the requirements for mixtures to be used on book papers. Since process inks are used on coated, calendered and other book papers, naturally any mixture would work just about the same, driers must be adjusted in

Over-impression: Proofed on the Vandercook Proof Press used in the preceding demonstration, too much instead of too little impression was applied. A thickening of type and a generally black proof resulted.

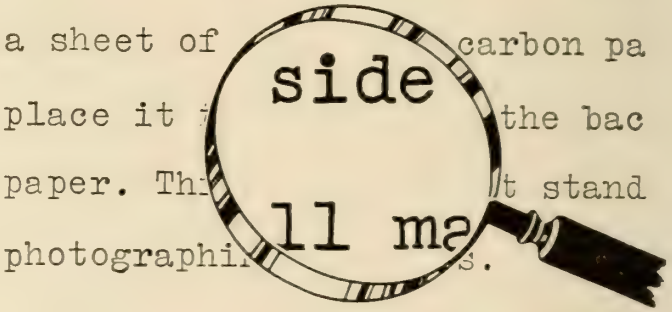
to process inks and in some cases it is deemed advisable to keep on hand green, orange, and purple because some ink makers can make these three colors higher in chroma than they can be mixed so far as gloss inks are concerned.

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Correctly proofed: This illustration indicates that, from the same type and the same press used in the preceding two illustrations, a good craftsman can produce high quality proofs for use in any of the processes.



Bad typewriter copy: As with type proofs, typewritten copy that is to be photographed and reproduced should be carefully inspected under a magnifying glass. Look particularly for blurs, fuzziness, broken letters.



Good typewritten copy: Even though enlarged many times, good typewriter copy for offset or gravure or even letterpress reproduction is clean, even in color, sharp. For special typewriters, see "Typing for offset."

what they belong to and why they belong to it. Educate them regarding the fact that unionism must go much farther than merely paying dues; that membership carries with it an obligation not only to their local union but to all working men and women; to all

Poor copy: The above sample was typed on a good grade of bond paper. While above average for correspondence, it was poor for reproduction purposes. Notice light and dark, fuzzy, and broken characters.

what they belong to and why they belong to it. Educate them regarding the fact that unionism must go much farther than merely paying dues; that membership carries with it an obligation not only to their local union but to all working men and women; to all

Good copy: Clean type characters, a black carbon ribbon that is not too black nor too light, a good typist, a typewriter with automatically controlled "touch," are some of the elements that produce good copy.

Proofreaders' marks

It is hardly necessary to emphasize the need for a clear, simple set of proofreaders' marks and a method of making those marks that is standardized and efficient. There are other sets of marks that can be used in addition to or in place of those below, as long as the mark used is clearly understood by all concerned. Symbols listed here, while not sacrosanct, are recommended because they are widely used and will be readily understood by editor, reader, and printer.

If the marks on the proof are not clear to the compositor or operator, much time may be wasted in trying to find out what they mean; or, as frequently happens, matter will be reset wrong, involving additional corrections, expense, and delay.

For a most efficient procedure, it is recommended that generally accepted marks be utilized in marking up proofs to aid the typesetter in making all corrections on galley or page proofs.

The demonstration on this page will be found useful in that the commonly used marks are illustrated, explained, and then actually used to correct an error in copy.

Marks always should be made in the margins at the left or right and should be not lower than the line being corrected. Indicating them only within the text may result in their being overlooked. Some proofreaders draw a line from the error to the correction in the margin. This method should be used sparingly; but if you do, see to it that the lines do not cross each other. Proofreaders, as a rule, do not use guide-lines. A medium pen or pencil (not too hard) is best for marking. Marks should be written so they can be easily read.

Mark	Explanation	Example
⁀	Take out character indicated.	The proof.
∧	Left out, insert.	The proof.
#	Insert space.	Theproof.
⁀	Turn inverted letter.	The proof.
x	Broken letter.	The proof.
⊥	Push down space.	The proof.
lg #	Even space.	A good proof.
⌣	Less space.	The proof.
⁀	Close up; no space.	The proof.
tr	Transpose.	A proof good.
wf	Wrong font.	The proof.
lc	Lower case.	The Proof.
═ sc	Small capitals.	The proof. The proof.
≡ c + sc	Capitals and small capitals.	The proof. The proof
≡ caps	Capitals.	The proof. The proof.
A ≡	Capitalize.	The proof.
ital	Italic.	The proof. The proof.
rom	Roman.	The proof.
~~ bf	Bold face.	The proof. The proof.
..... stet	Let it stand.	~~The~~ proof. ~~The~~ proof.
out sc	Out, see copy.	He proof.
spell out	Spell out.	King Geo
¶	Start paragraph.	read. The
no ¶	No paragraph; run-in.	marked. Three men.
⌐	Raise.	The proof.
⌙	Lower.	The proof.
⊏	Move left.	The proof.
⊐	Move right.	The proof.

Mark	Explanation	Example
‖	Align type.	Three men. Two women.
=	Straighten line.	The proof.
⊙	Insert period.	The proof
,/	Insert comma	The proof
:/	Insert colon.	The proof
;/	Insert semicolon.	The proof
'/	Insert apostrophe.	The boys proof.
" "	Insert quotation marks.	Marked it proof.
=/	Insert hyphen.	A proofmark.
2	Insert inferior figure.	Water, H_2O
2	Insert superior figure.	$A^2 - B^2 = C$
!	Insert exclamation mark.	Prove it !
?	Insert question mark.	Is it good?
(?)	Query for author.	(?) was The proof read by
[/]	Insert brackets.	[/] The Jones boy
(/)	Insert parentheses.	(/) The proof I
| en |	Insert 1-en dash.	| en | The proof
| em |	Insert 1-em dash.	| em | The proof
| 2 |	Insert 2-em dash.	| 2 | The proof
□	Indent 1-em.	□ The proof.
□□	Indent 2-ems.	□□ The proof.
□□□	Indent 3-ems.	□□□ The proof.
ld >	Insert lead between lines.	ld > The proof was read by Jones.
hr #	Insert hair space	hr # The proof was read by Jones.
e	Delete and close up.	The boys proof was read by Jones.
Qu ?	Is this right?	Qu ? The proof was not read by Jones.

Ad copy specifications

Double-spaced typewritten copy with liberal margins and instructions that are specific and legible reduce errors and facilitate rapid service

Frederick W. Schmidt

There seems to have been little written on the subject of the preparation of copy for the setting of advertisements. Among the agencies and other buyers of typography, various methods have been used, ranging from the sending of unspecified copy to the typographer to the practice of the buyer's marking and specifying type size, measures, and spacing, with the copy keyed to an accompanying layout.

The former method is practiced by buyers who may not have the talent or time to make typographical specifications or layouts and who depend upon the typographer to use his skill and interpretation to produce composition.

This practice is not to be recommended except in cases of emergency, or where the buyer has extreme confidence in the craftsmanship of the typographer. It should be remembered that unspecified copy without a layout requires time, adds to cost of the job.

Many agencies and other concerns who require typographic service have recognized the value of using type layout men. Their employment has been fully justified by the performance of smoother production for both the agency and the typographer. A higher standard of quality is thus achieved. Questions of typographical interpretations and costly revises, which mean precious time and money, also are eliminated.

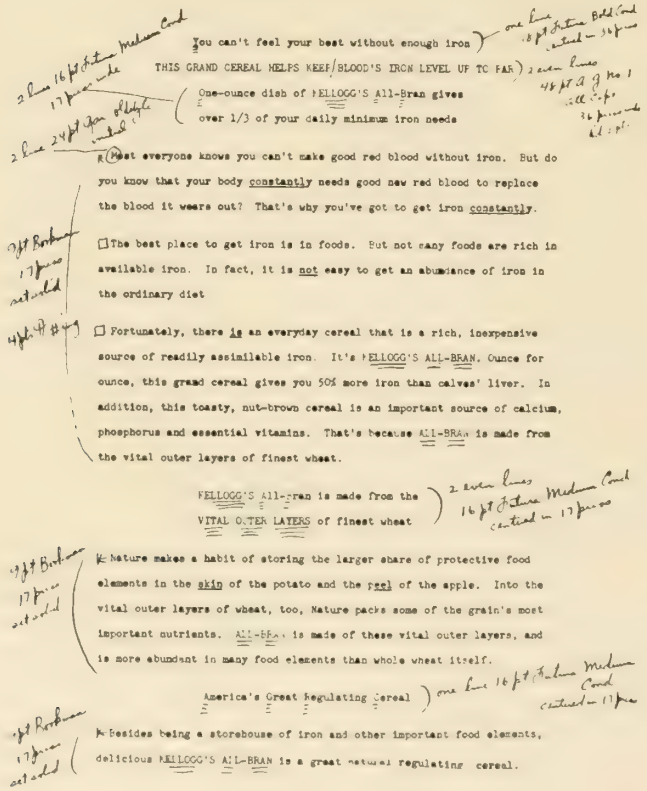
Among type layout men, there are two slightly varied methods of marking type specifications. One is to indicate type instructions on the layout and key the copy, by letter or numeral, as to the location of the various type elements. The other method is to write the size, type face, and measure in the margin of copy sheet, key layout for type matter.

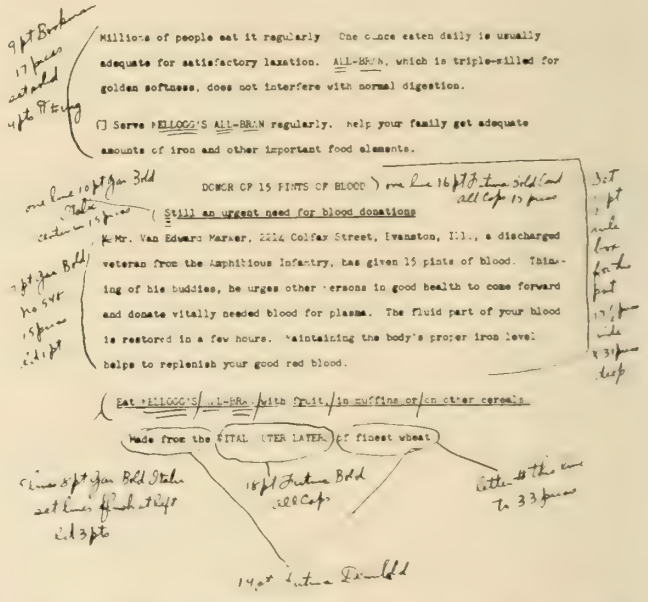
While the method of marking the copy rather than the layout is more frequently used, it is hoped that one method be universally practiced. From the standpoint of the advertising typographer, the copy marking method is the more practical and efficient.

It might be well to suggest when marking specifications that a sharp red crayon pencil be used. Writing should be legible. The purpose of the use of a red or other color that contrasts with the typewritten copy is to avoid any conflict of copy with the specifications.

Copy should be typewritten, and preferably double spaced. Liberal margins must be allowed on each side of the copy for writing specifications and instructions. The width of typewritten copy should not exceed 5½ inches on an 8½x11-inch sheet.

To demonstrate the kind of material that the advertising typographer would like to receive, a practical layout and copy, with specifications, is presented.





Copy for whole ad: Note that each paragraph of the main copy, although set in the same size, style, and measure of type, is marked. Since some of the first lines of paragraphs are indented and some are not, each is clearly marked for indention or to be set flush left so that the typesetter will not have to guess whether he is to set copy as typed or whether an instruction is omitted. Also note the specific instructions for the setting of the box and the signature of the ad.

2 lines 16 pt Futura Medium Cond
17 picas wide

2 line 24 pt Gar. oldstyle initial

one line 18 pt Futura Bold Cond centered in 36 picas

2 even lines 48 pt A.J No. 1 all caps 36 picas wide Ld 2 pts

You can't feel your best without enough iron

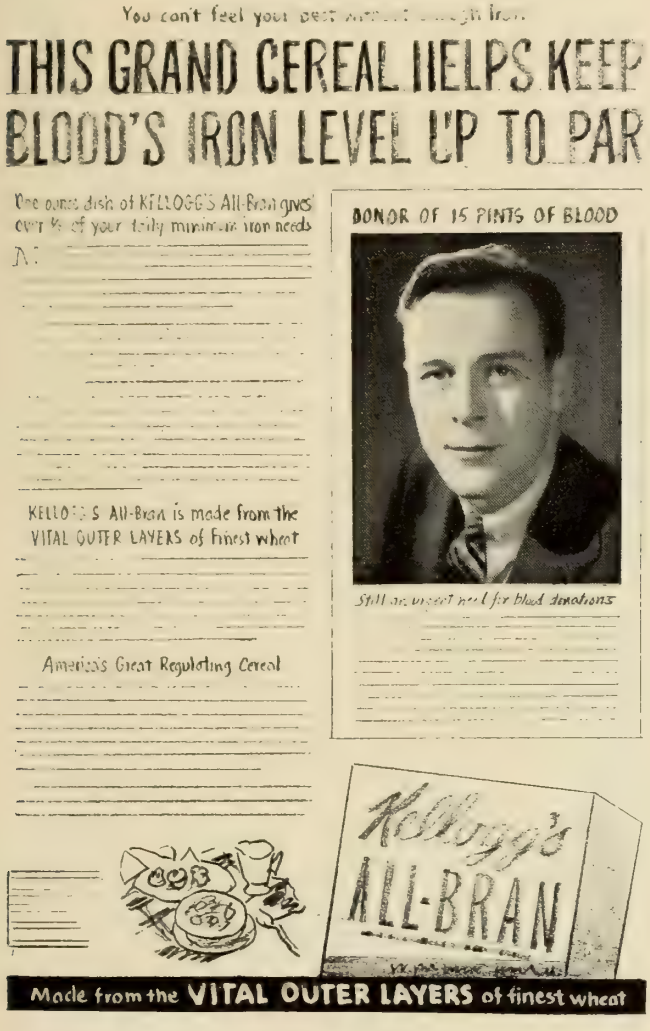
THIS GRAND CEREAL HELPS KEEP BLOOD'S IRON LEVEL UP TO PAR

One-ounce dish of KELLOGG'S All-Bran gives over 1/3 of your daily minimum iron needs

Most everyone knows you can't make good red blood without iron. But do you know that your body constantly needs good new red blood to replace

Display lines: Note that all instructions are specific, connected clearly to the lines to which they refer, and employ standard proofreaders marks. The very first instruction on the upper left corner of the copy (referring to the third and fourth lines of copy) is a good example. Size, precise name of type face (Futura Medium Condensed, not just Futura) and line measure are specified. The top line of the copy is similarly clearly specified and in addition it is noted that it is to be set in one line, centered on 36 picas. The second line of copy is called for in two even lines and the break at the end of the first line is clearly indicated.

The next two lines of the copy are typed line for line as they are to appear in the finished advertisement. Letters that are to be set in upper case are not only triply underlined but typed in capitals. The first line of the body copy starts with a two line initial which is specifically called for. While most of these instructions are clear enough for the typographer as is, when accompanied by a neat, simple layout such as the one shown below (left), the typographer can visualize at a glance what he is working toward and can set up and make up the copy intelligently, with the result that corrections due to errors in misinterpretation of instructions are reduced to a minimum of alterations and time consumed.



Layout: All elements lettered or drawn in correct size and position.



Proof of ad: Note how the finished ad corresponds to the layout.

Transparent proofs

Sharp and opaque proofs pulled on transparent cellophane or glassine stock used effectively for lithographic, gravure, and letterpress plates

O. F. Duensing

From the early days of stone lithography to the present highly developed offset-lithography industry, there have been many important contributions in platemaking, inks, presses, and other operations involved in the process.

Among these is the present-day method for pulling impressions of type on cellophane or glassine, which eliminates the need for any photographic operations.

The method of making reproduction proofs of type on white paper with black ink, then photographing it, is still widely used. But the method being adopted more extensively each year by offset-lithography, rotogravure and photo-engraving plants is to prove type on transparent cellophane or glassine and, from this, to make contact prints on zinc lithograph plates for either the deep etch or albumen process.

Whether made from plates, type, or letterpress forms, with or without halftones, such transparent impressions are printed directly on cellophane on one side and by offset from a blanket on the other, with both sides in exact register.

Transparent impressions made in this manner are claimed to be absolutely opaque without any fuzz or slur around the letters, and superior to other methods of producing transparent positives.

Some of the purposes for which these transparent impressions are in use are:

1. For making contact prints on zinc lithograph plates for the deep etch process.
2. For contact printing on zinc plates to make reverses for lithographing by the albumen process.
3. For contact printing in gravure.
4. For converting halftone letterpress color process plates to lithograph plates.
5. For contact printing on copper or zinc to make reverse letterpress printing plates.
6. For contact printing on sensitized film or glass to make a negative. The negative, in turn, is used for contact printing on zinc plates for lithographing by albumen process, or for contact printing on copper or zinc to make duplicate letterpress plates of type, line cuts, or halftones as the case may be.

The actual production of transparent impressions on either cellophane or glassine is a refined proving operation, depending for its success on the precision of the proof press and the experience and skill of its operator.

In a modern plant, the equipment for making transparent impressions generally includes a proof press equipped with offset blanket instead of the usual cylinder packing, and capable of perfect register; a viewing cabinet with facilities for dusting and cleaning the transparencies; cellophane of .0015 thickness; lampblack, bronze, or talcum powder and cotton for dusting and cleaning; and a magnifier.

The series of photographs accompanying this article shows how simple and quick the procedure of producing transparent impressions actually is. Further serious consideration of the process will also suggest that, aside from the obvious savings made through the elimination of the camera, by far the most important element gained is the absolute accuracy of the reproduction—the sharpness and clearness of the subject.



1. The type of equipment used for making transparent impressions on cellophane or glassine (No. 4 Vandercook Proof Press). In first operation, three impressions are printed on rubber blanket.



2. Cellophane or glassine is fed to grippers, with care that sheet is not wrinkled or bunched on edge before closing gripper, lowering roller.



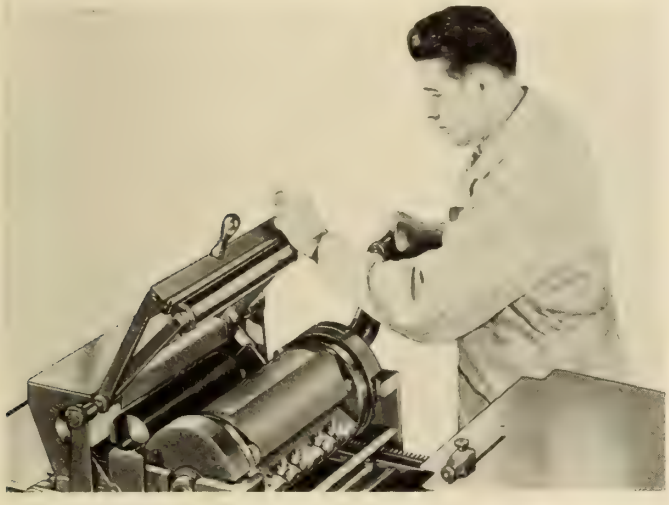
3. The cellophane is next smoothed out on the feed board, then brought forward over the roller and laid flat on the shelf provided for that purpose.



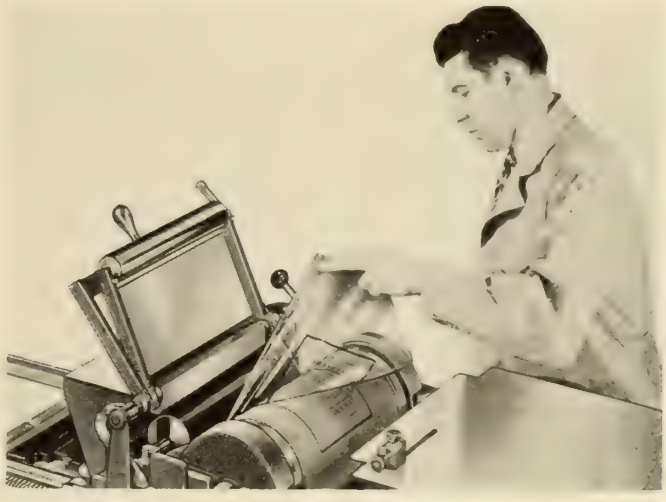
4. With the cellophane held flat in position on the special shelf, the operator then lowers the frame with pad attached to smooth out and hold the cellophane sheet flat against the roller, preparatory to actual printing.



5. Handle of frame is pushed down to smooth cellophane, press it against blanket. Cylinder moves forward, and takes first impression—direct from form on one side of cellophane, from offset blanket on other side.



6. After cellophane is fed to cylinder, both roller and frame are raised out of the way to avoid contact with impression cylinder on its next revolution. Another impression is then made on cellophane. These multiple impressions give very opaque transparency without excessive inking.



7. After impression has been made, cellophane is peeled off as cylinder returns to starting position. Once transparent impression is removed, it is dusted on both sides with lamp black, bronze, or talcum powders, carefully cleaned with absorbent cotton, and checked for opaqueness and register.

Combination font list

More than 270 combinations of two-letter mats that facilitate handling of companion machine-composed and cast faces of same size

Compiled by the editors

Intertype

Alternate Gothic No. 1 with Vogue Bold Condensed 8, 10, 12, 14, 18, 24
Alternate Gothic with Palisade 18, 24
Antique No. 1 with Cheltonian Bold 6, 8, 10, 12, 14
Baskerville with Bold 6, 8, 9, 10, 11, 12, 14
Bell Gothic with Bold 6, 7, 8
Bernhard Fashion with Park Avenue 12, 14, 18
Beton Extra Bold with Beton Wide 18, 24
Beton Medium with Bold 8, 9, 10, 11, 12, 14, 18, 24
Beton Wide with Extra Bold 8, 10, 12, 14
Bodoni Bold Condensed with Gothic No. 13 18, 24
Bold Face No. 9 with De Luxe Gothic Med. 6, 6a, 6b, 12, 12a, 12b, 12c
Bold Face No. 9, Gothic No. 31 6, 6a, 6b, 6c, 12, 12a, 12b, 12c, 12d, 12e
Cairo with Bold 6, 8, 10, 12, 14, 18, 24
Cairo Italic with Bold Italic 6, 8, 10, 12, 14
Cairo Bold Condensed with Medium Condensed 18, 24
Cairo Bold Italic with Medium Italic 18, 24
Cairo Extra Bold Condensed with Medium Condensed 18, 24
Cairo Medium Condensed with Extra Bold Condensed 10, 12, 14
Cairo Medium 18 point with 24 point Cairo Medium Condensed
Cairo Medium with Bold 12, 14
Cairo Medium with Heavy 6, 8, 10, 12, 14
Century Expanded with Antique No. 1 6, 8, 10
Century Expanded with Century Bold 6, 7, 8, 9, 10, 12, 14
Century Expanded with Century Bold Italic 10, 12, 14
Century Expanded with Cheltonian Bold 6, 8, 10, 12, 14
Century Expanded with Gothic No. 16 4, 5, 6
Century Expanded Italic with Bold Italic 8, 9, 10
Cheltonian with Cheltonian Bold Condensed 8, 10, 12, 14, 18, 24
Cheltonian Bold with Cheltonian Wide 18
Cheltonian Bold Condensed with Gothic Condensed No. 1 14
Cheltonian Wide with Cheltonian Bold 6, 8, 10, 12, 14
Clarendon Condensed with Title Condensed 10, 12
Cloister Bold with Cheltonian Bold Condensed 24
Cloister Bold Tooled with Cloister Bold Italic 14, 18, 24
De Luxe Gothic Light with Medium 6, 6a, 6b, 6c, 12, 12a, 12b, 12c, 12d
De Vinne with Antique No. 3 6, 8, 9, 10, 11, 12, 14
Elzevir with Cheltonian Bold 8, 10, 12, 14
Engravers Text with Typo Roman Light 10, 12, 14, 16
Franklin Gothic with Beton Extra Bold 8, 10, 12, 14, 18, 24
Futura Bold Condensed with Medium Condensed 6 with 8, 8 with 10 10 with 12, 12 with 14
Futura Bold Condensed with Medium Condensed No. 2 14, 18, 24
Futura Medium with Demibold 6, 8, 10, 12, 14
Garamond with Bold 6, 8, 10, 12, 14
Garamond Bold with Garamond 18, 24
Gothic No. 5 with Gothic Condensed No. 1 12
Gothic No. 13 with Bodoni Bold Condensed 18, 24
Gothic No. 13 with Cairo Bold Condensed 8, 10, 12, 14, 18, 24
Gothic No. 13 with Cairo Extra Bold Condensed 10, 12, 14, 18, 24
Gothic No. 13 with Cheltonian Bold Condensed 6, 8, 10, 12, 14, 18, 24
Gothic No. 16 with Bodoni Modern 8, 10, 12, 14
Gothic No. 16 with Century Bold 18, 24
Gothic No. 16 with Cheltonian Bold 6, 8, 10, 12, 14, 18, 24
Gothic No. 16 with Hobo 10, 12, 14
Gothic No. 29 with Gothic No. 30 6, 6a, 6b, 6c, 12, 12a, 12b, 12c, 12d
Gothic No. 31 with Bold Face No. 9 12, 12a, 12b, 12c
Gothic No. 31 with Gothic No. 32 6, 6a, 6b, 6c, 12, 12a, 12b, 12c, 12d
Gothic No. 32 with Bold Face No. 9 6, 6a, 6b, 6c, 12, 12a, 12b, 12c, 12d
Gothic No. 34 with Gothic No. 35 6, 6a, 6b, 6c, 12, 12a, 12b, 12c, 12d
Gothic Condensed No. 1 with Cheltonian Bold Extra Condensed 18, 24
Gothic Wide with Cheltonian Bold Extended 6, 8, 10, 12, 14
Greeting Gothic Light with Medium 6, 6a, 6b
Greeting Monotone with Adonis 10, 12, 14, 18
Ideal News with Antique No. 2 6
Ideal News with Antique Italic 8, 9
Ideal News with Antique No. 3 9
Ideal News with Bold 5½, 6, 6½, 6¾, 7, 7½, 8, 8½, 9, 10, 11, 12, 14
Ideal News with Century Bold 8, 9
Ideal News with Century Bold Italic 8, 10, 12, 14
Ideal News with Gothic No. 3 5½, 6, 6½, 7, 7½, 8, 9, 10, 12, 14
Ideal News No. 2 with Bold 8
Ideal Teletype with Bold 5½, 6, 7, 8, 9
Kenntonian with Cloister Bold 6, 8, 10, 12, 14
Korinna with Bold 6, 8, 9, 10, 12, 14
Lining Cairo with Bold 6, 6a, 6b, 12, 12a, 12b, 12c
Lining Vogue with Bold 12, 12a, 12b, 12c, 12d
Lorimer with Remson Bold 6, 8, 9, 10, 12
Medieval with Bold 6, 8, 9, 10, 12, 14
Medieval Bold with Medieval 18, 24
Medieval Expanded with Bold 6
Minuet with Lotus 10, 12, 14, 18
No. 1 with Bold Face No. 2 6, 7, 8
No. 1 with Clarendon No. 1 5½
No. 1 with Gothic No. 3 8
No. 2 with Antique No. 2 6
No. 2 with Bold Face No. 1 6, 7, 8, 9
No. 2 with Bold Face No. 2 5½, 6, 7
No. 2 with Condensed Title No. 3 6, 7, 8
No. 2 with Gothic No. 3 6, 7, 8, 10
No. 2 with Lambert Bold 8
No. 2b with Bold Face No. 2b 5½
No. 4 with Condensed Bold Face No. 2 5½
No. 7 with Doric No. 1 6
No. 10 with Gothic No. 4 5, 6
No. 11 with Gothic Condensed No. 4 6
No. 11 with Gothic Condensed No. 6 6
No. 12 with Gothic No. 11 7
No. 12 S. N. with Gothic No. 523 7
No. 13 with Doric No. 2 10
No. 14 with Doric No. 1 5½
No. 15 with Doric No. 6 7
No. 16 with Century Bold 8, 9, 10
No. 16 S. N. with Doric No. 5 7
No. 17 with Condensed Title No. 5 6
No. 19 with Title No. 1 8
No. 21 with Gothic No. 3 7
No. 26 with Doric No. 2 6, 8
No. 50 with Gothic No. 40 8, 10
Old Style No. 1 with Antique No. 1 6, 8, 9, 10, 11, 12, 14
Old Style No. 1 with Cheltonian Bold 6, 8, 10, 12, 14
Parisian with Rivoli 10, 12, 14, 18
Regal with Bold 5, 5½ No. 2, 6 No. 1, 6 No. 2, 7 No. 1, 7 No. 2 8 No. 1, 8 No. 2, 9, 10, 12, 14
Regal with Gothic No. 3 5½ No. 2, 6 No. 1, 7 No. 2, 8 No. 1, 8 No. 2, 9
Regal No. 2A with Antique 7
Regal No. 2A with Cairo Bold No. 2 5½, 7, 8, 10, 12

Regal Teletype with Bold 8 No. 2
Remington Typewriter with Underscore 10, 12
Rex with Bold 5, 6, 7, 7½, 8, 10, 12, 14
Rex with Franklin Gothic 4, 5
Ronaldson with Antique No. 1 6, 8, 10, 11, 12, 14
Ronaldson with Cheltonian Bold 6, 8, 10, 12, 14
Rugged Black with Cairo Bold 18, 24
Scotch with Cheltonian Bold 8, 10, 12, 14
Tariff Ionic with Antique No. 3 8
Typo Roman Shaded with Engravers Text 12, 14, 16, 18
Underwood Typewriter with Underscore 10, 12
Vogue with Bold 6, 8, 10, 12, 14, 18, 24
Vogue Oblique with Bold Oblique 6, 8, 10, 12, 14
Vogue Bold Condensed with Extra Bold Condensed 8, 10, 12, 14, 18, 24
Vogue Bold Condensed with Vogue Condensed 18, 24
Vogue Extra Bold with Bold Condensed 18, 24
Vogue Extra Bold with Vogue Bold 6, 8, 10, 12, 14, 18, 24
Vogue Extra Bold with Vogue Bold Oblique 18, 24

Linotype

Bank Gothic Light with Medium 6, 12
Bank Gothic A Light with Medium 6, 12
Bank Gothic B Light with Medium 6, 12
Bank Gothic C Light with Medium 6, 12
Bank Gothic D Light with Medium 12
Baskerville with Baskerville Bold 7, 8, 9, 10, 11, 12, 14
Bell Gothic, Light and Bold 6, 7, 8
Bell Gothic with 7 pt. Gothic 12 6
Bell Gothic with 8 pt. Gothic 12 7
Bodoni Bold Condensed with 14 pt. Bodoni Bold 18
Bodoni Bold Condensed with 18 pt. Bodoni Bold 24
Bodoni Bold Condensed with 18 pt. Bodoni Bold Italic 24
Bold Face No. 9 with Gothic No. 31 6, 6a, 6b, 6c, 12, 12a, 12b, 12c, 12d
Caledonia with Bold 6, 8, 9, 10, 11, 12, 14
Century Bold with Century Expanded 6, 7, 8, 9, 10, 11, 12, 14, 18
Century Expanded with Cheltenham Bold 6, 8, 10, 12, 14
Century Expanded with Gothic No. 16 4
Cheltenham Cond. with Chelt. Bold Cond. 8, 10, 12, 14
Cheltenham Wide with Cheltenham Bold 6, 8, 10, 12, 14
Classic with Century Bold 8, 10, 12, 14
Cloister Wide with Bold 6, 8, 10, 12, 14
Corona with Bold Face No. 2 7½, 8, 8½, 10
Corona with Gothic 7½
DeVinne with Antique No. 3 6, 8, 9, 10, 11, 12, 14
DeVinne with 10 pt. Gothic No. 4 9
DeVinne Outline with Bold Face No. 6 10, 12, 14
Electra with Electra Bold 8, 9, 10, 11, 12, 14
Elzevir with Cheltenham Bold 10, 12, 14
Erbar Bold Cond. with Erbar Light Cond. 18, 24
Erbar Light Cond. with Erbar Bold Cond. 8, 10, 12, 14, 18
Erbar Medium Cond. with Erbar Light Cond. 18, 24
Excelsior with Bold Face No. 2 5, 5½, 6, 7½, 7¾, 9, 10, 11, 12, 14
Excelsior with Gothic No. 3 5, 5½, 6
Excelsior with Memphis Bold 6, 7, 7½, 8, 9, 10, 11, 12, 14
Excelsior No. 1 Teletype with Bold Face No. 2 7, 8
Excelsior Teletype with Bold Face No. 2 5½, 6, 7½, 9, 10, 11
Excelsior Teletype with Gothic No. 3 6
No. 1 Excelsior with Bold Face No. 2 7, 8
No. 1 Excelsior with Gothic No. 3 7
No. 2 Excelsior with Bold Face No. 2 7
No. 2 Excelsior with Gothic No. 3 7, 8
Gothic No. 3 with 11 pt. Gothic Cond. No. 1 10
Gothic No. 5 with Gothic Cond. No. 1 12
Gothic No. 13 with 12 pt. Gothic No. 16 18
Gothic No. 13 with 14 pt. Gothic No. 16 24
Gothic No. 13 with Cheltenham Bold Cond. 8, 10, 12, 14, 18, 24
Gothic No. 13 with De Vinne Condensed 12, 14
Gothic No. 13 with Memphis Extra Bold Condensed 18, 24
Gothic No. 16 with Century Bold 18, 24
Gothic No. 16 with Cheltenham Bold 8, 10, 12, 14, 18, 24
Gothic No. 16 with Title No. 4 8, 10, 12, 14
Gothic No. 25 with Gothic No. 26 6, 6c, 8, 10, 12
Gothic No. 25 with Gothic Cond. No. 2 6a
Gothic No. 25 with 8 pt. Gothic Cond. No. 2 6b
Gothic No. 29 with Gothic No. 30 6, 6a, 6b, 6c, 12, 12a, 12b, 12c
Gothic No. 31 with Gothic No. 32 6, 6a, 6b, 6c, 12, 12a, 12b, 12c, 12d
Gothic No. 31 with Gothic No. 33 6, 6a, 6b, 6c, 12c
Gothic No. 32 with Gothic No. 33 6, 6a, 6b, 6c, 12, 12a, 12b, 12c
Granjon with Bold 6, 8, 9, 10, 11, 12, 14
Ionic No. 5 with Bold Face No. 2 5, 5½, 6, 6½, 6¾, 7, 7½, 8, 9, 10, 12
Ionic No. 5 with Gothic No. 16 5½
Ionic No. 5 Teletype with Bold Face No. 2 5½, 7, 7½, 8, 9
Lining Memphis Light with Memphis Bold 6, 6a, 6b, 12, 12a, 12b, 12c
Lining Metromedium with Metrothin 6, 6a, 6b, 12, 12a, 12b, 12c
Memphis Bold with Light 18, 24
Memphis Bold with Medium 18, 24
Memphis Bold Cond. with Medium Cond. 18, 24
Memphis Extra Bold with Gothic No. 16 10, 12, 14, 18, 24
Memphis Extra Bold Cond. with Bodoni Bold Cond. 30
Memphis Extra Bold Cond. with Gothic No. 13 8, 10, 12, 14, 18, 24
Memphis Extra Bold Cond. with Medium Cond. 18, 24
Memphis Light with Bold 6, 8, 8½, 9, 10, 12, 14, 18
Memphis Medium with Bold 6, 8, 10, 12, 14
Memphis Medium Cond. with Bold Cond. 10, 12, 14
Memphis Medium Cond. with Extra Bold Cond. 8, 10, 12, 14
Metroblack No. 2 with Metrolite No. 2 6, 8, 10, 12, 14, 18, 24
Metrolite No. 2 with Italic 6, 8, 10, 12, 14, 18, 24
Metrolite No. 2 with Metroblack No. 2 6, 8, 10, 12, 14, 18
Metromedium No. 2 with Metrothin No. 2 6, 8, 10, 12, 14, 18, 24
No. 1 with Bold Face No. 2 6, 7, 8
No. 2 with Antique No. 2 6
No. 2 with Bold Face No. 1 6, 7, 8
No. 2 with Bold Face No. 2 5½, 6, 7
No. 2 with Condensed Title No. 3 7, 9, 10
No. 2 with Gothic No. 3 6, 7, 8, 10
No. 2b with Bold Face No. 2b 5½
No. 4 with Bold Face No. 2 Condensed 5½
No. 6 with Gothic No. 16 4¾
No. 8 with Bold Face No. 2 6
No. 10 with Gothic No. 4 5, 6
No. 11 with Gothic Condensed No. 4 5½, 6
No. 11 with Gothic Condensed No. 4 (self-spacing) 6
No. 11b with Gothic Condensed No. 4b 6
No. 12 with Gothic No. 11 6, 7
No. 16 with Century Bold 6, 7, 8, 9, 10, 12, 14
No. 17 with Condensed Title No. 5 6, 8
No. 18 with Antique Black No. 1 5
No. 19 with Title No. 1 8
No. 21 with Gothic No. 4 7
No. 28 with Antique Black No. 1 6, 7, 8, 9, 10
Old Style No. 1 with Antique No. 1 6, 7, 8, 9, 10, 11, 12, 14
Old Style No. 1 with Antique No. 1 Italic 12
Old Style No. 1 with Cheltenham Bold 5, 6, 8, 10, 12
Old Style No. 1 with Title No. 1 6, 8, 10
Old Style No. 1 with Title No. 1 (International Phonetic) 10
Old Style No. 1 with Title No. 2 8
Opticon with Bold Face No. 2 5½, 6, 7, 7½, 8, 9, 10; 11, 12
Opticon with Gothic No. 16 6
Opticon with Memphis Bold 7, 8, 10, 12
Pabst Extra Bold Condensed with 14 Point Gothic No. 16 18
Paragon with Bold 5½, 6, 7, 7½, 8, 9, 10
Paragon Teletype with Bold 7
Remington Typewriter with Underscore 8, 10, 12, 12 No. 4
Spartan Black Condensed with Medium Condensed 18, 24
Spartan Black Condensed with 14 pt. Spartan Heavy 8
Spartan Black Condensed with 18 pt. Spartan Heavy 24
Spartan Light with Medium 6, 8, 9, 10, 12, 14
Spartan Medium with Heavy 6, 8, 10, 12, 14, 18, 24
Tariff Typewriter, Light with Bold 8
Teletypesetter Corona with Gothic 7½
Teletypesetter No. 1 Excelsior with Gothic No. 3 7
Textype with Bold Face No. 2 6, 7, 8, 9, 10, 12, 14
Underwood Typewriter with Underscore 10, 10 No. 4, 12

Type color and combination visualizer

Paragraph showings of 72 text faces, as rated for their comparative color value; die-cut sheet facilitates comparison with display lines on pages 478-520.

Edward M. Gottschall

Selecting the right style of type face for a given advertisement involves consideration of the nature of the selling message, the kind of art work that will accompany it, the process and paper upon which it will be reproduced, what other type faces will appear in the same advertisement, what media the advertisement will appear in, whether it is a double spread (a full visual unit by itself), or whether it must compete with editorial matter or other ads.

In choosing a face for a given job, the type director must consider type color, legibility, and general style, as well as size. To make some such comparative visualization possible is the purpose of this Type Color and Combination Visualizer.

For this demonstration, 72 of the more widely used text faces have been picked. Because the best conception can be obtained from a block of type rather than from a one-line showing, all text faces are shown in blocks of five lines in 10 point, two point leaded, 13 picas wide.

In the evaluation of the various types and the development of this Visualizer, PRODUCTION YEARBOOK editors are very much indebted to the Electronic Mechanical Products Co., Atlantic City, N. J., and the American Standards Testing Bureau, Inc., New York, for their invaluable cooperation and assistance.

A block of solid black of the same area as the type blocks was tested and rated 100. A pure white block was rated zero. Light meter readings for the 72 text blocks then were made and calibrated from 0-100 on that basis.

Letter shapes affect color readings. Thick, or thin, strokes on a letter may give a text block a darker, or lighter, appearance than seems logical, but the consistently even strokes may actually cover more area. There also may seem to be undue word spacing in some blocks, but all were set up as any normal job would be, to give a typical appearance.

The 72 text faces, were printed on a loose sheet, which was diecut, leaving between each block of copy a window. By placing the diecut sheet over the display lines beginning on page 478. it is possible to bring together for purposes of visualization any one of more than 1000 display faces with any one of 72 text faces, a total of over 72,000 combinations.

The following group of type face combinations was selected from the work of Albert Schiller, a leading New York type director. They are interesting because they all are unconventional. For the specific uses to which Mr. Schiller put them, each was very effective.

There is much literature on the subject of combining type faces and the rules and principles involved. There are many lists of recommended combinations and Mr. Schiller's suggestions are examples of what can be done in this respect.

Rather than offer just another such list, the editors of the PRODUCTION YEARBOOK prefer to make it possible for their readers to visualize thousands of combinations and to select for a given job that one that appeals most to them, permitting them thereby to combine taste and feeling with basic rules.

Following is the list of type manufacturers and their abbreviation key as used in the examples:

A—American Type Founders
B—Bauer Type Foundry, Inc.
Bl—Baltimore Type & Composition Co.
C—Continental Type Associates
E—European Typefounders
I—Intertype Corp.
Li—Mergenthaler Linotype Co.
Lu—Ludlow
M—Monotype (Lanston Monotype Machine Co.)
N—Neon Type Foundry
RSW—Ruttle, Shaw & Wetherill, Inc.

Anniversary
Number

GORGEOUS
GLADIOLAS

Crown
AND SCEPTER

Balloon
Race Postponed

FORMAL
Apology

MUTTON
FRESH Today

Thunder
and Lightning

STENCILS
of the times

HORSES
for Hire

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Baskerville, Li. Color index: 12.2

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Bodoni Bold, I. Color index: 18.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Cairo Light, I. Color index: 12.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Baskerville Italic, I. Color index: 12.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Bodoni Bold Italic, I. Color index: 18.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Caslon, Li. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Benedictine, Li. Color index: 15.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Bodoni Book, I. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Caslon, 137, Li. Color index: 12.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Bernhard Modern Bold, A. Color index: 21.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Bodoni Book Italic, I. Color index: 14.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are

Caslon 471, A. Color index: 16.2

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very

Bernhard Modern Roman, A. Color index: 17.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Bookman, Li. Color index: 18.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are

Caslon 471 Italic. Color index: 15.6

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Bodoni, I. Color index: 14.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Bulmer, A. Color index: 20.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Caslon 540, Li. Color index: 13.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there

Century Bold Cond., A. Color index: 31.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Corvinus Medium, Bl. Color index: 18.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of

Electra, Li. Color index: 13.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Century Schoolbook, M. Color index: 19.9

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark

Deepdene, M. Color index: 12.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very

Estienne, Li. Color index: 13.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Cheltenham, Li. Color index: 14.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are infinite variations of tone.

Deepdene Italic, M. Color index: 12.9

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Fairfield, Li. Color index: 12.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Cloister Bold, I. Color index: 17.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print

De Vinne, I. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Franklin Gothic Cond., I. Color index: 24.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of

Cochin, M. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there

Eden Light, Lu. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark;

Futura Bold, I. Color index: 23.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Cochin Italic, M. Color index: 12.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Egmont Medium, I. Color index: 12.2

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print

Futura Bold Italic, I. Color index: 23.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Futura Demi Bold, 1. Color index: 21.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Garamond, 1. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark;

Goudy Bold, 1. Color index: 16.2

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Futura Demi Bold Italic, 1. Color index: 18.3

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Garamond Italic, 1. Color index: 11.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Granjon, Li. Color index: 11.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Futura Light, 1. Color index: 11.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Garamond Bold, 1. Color index: 17.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Granjon Bold, Li. Color index: 16.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Futura Medium, 1. Color index: 15.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark there are infinite

Garamond Bold Italic, 1. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of

Italian Old Style, M. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are infinite vari-

Futura Med. Cond., 1. Color index: 18.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Garamond No. 3, Li. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and some print dark; between the ex-

Janson, Li. Color index: 13.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Futura Med. Italic, 1. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Goudy, 1. Color index: 13.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Kenntonian, 1. Color index: 11.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Lydian, A. Color index: 21.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Memphis Med. Italic, Li. Color index: 17.7

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Scotch Roman, I. Color index: 12.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Lydian Bold, A. Color index: 25.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

New Caslon, I. Color index: 16.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Times New Roman, M. Color index: 18.1

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Memphis Bold, Li. Color index: 21.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Number 16, I. Color index: 15.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print

Ultra Bodoni, Li. Color index: 29.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Memphis Bold Italic, Li. Color index: 18.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Old Style No. 7, Li. Color index: 14.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Waverly, I. Color index: 15.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and

Memphis Extra Bold, Li. Color index: 32.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and

Remington Type, Li. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are

Weiss, I. Color index: 11.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Memphis Medium, Li. Color index: 16.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Scotch Italic, I. Color index: 11.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are

Weiss Italic, I. Color index: 10.5

Column depth calculator

Used together with the copy-fitting tables and line-length calculator, it makes possible rapid, accurate copy-fitting with minimum of calculations

Compiled by the editors

Copy-fitting is the mathematical translating of the manuscript or copy into type characters to fit the area provided for it in the layout. In order to cast the copy, the following basic data must be determined: firstly, the number of characters in the copy; secondly, the character count (characters per pica) of the selected type face and size; thirdly, the dimensions of the area to be filled.

It is suggested that the copy caster obtain, or make on cardboard, a simple ruler that will measure elite and standard typewriter copy. It is also recommended, because short lines at the ends of paragraphs occupy the space of a full line, that copy be cast paragraph by paragraph rather than by computing the total characters in a long piece of copy.

To ascertain the character count of the selected face, refer to the copy-fitting tables that begin on page 458. If Linotype Bodoni Book in 9 point size is to be used, locate Bodoni Book in its alphabetical place under the Linotype listings and read off the count for 9 points, 2.98.

To determine how many characters fit into the line length required by a layout, use the table beginning on Page 456. For example, if a 13 pica column is called for, refer to the column headed 13 and read down this column to the figure on line with the left hand column key number, which reads 2.9-2.99.

Now use the typewriter gauge to measure off on the copy the number of characters contained in one line of type and draw a vertical line down through the copy at this point. If the copy is typed widely enough, two type lines can be so measured off on one typewritten line. Each line of copy to the left of the vertical line represents one or two typeset lines, as the case may be.

Characters to the right of the vertical line can be quickly measured with the typewriter gauge, combined with the short line in the paragraph, and the total lines per paragraph computed. The same procedure is followed for each paragraph.

To calculate the number of type lines per column inch, the table at the bottom of this page should be consulted. Figures in the extreme left- and right-hand columns represent column inches. Figures across the top and bottom represent type size plus leading. For example, if a 9-point type face is to be used and will be leaded one point, each line of it will occupy 10 points vertically. To find out how many lines are needed to fill 6 column inches of 9/10 point read down the column headed 10 to the horizontal line labelled 6. To determine how many column inches, for example, 50 lines of such copy will require, read down the column to 50, then read across to the left-hand column to ascertain the total.

Points→	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Col. inches
1/8	1	1	1	1																1/8
1/4	3	2	2	2	1	1	1	1	1	1	1	1	1							1/4
3/8	4	3	3	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	3/8
1/2	6	5	4	4	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	1/2
5/8	7	6	5	5	4	4	3	3	3	3	2	2	2	2	2	2	2	1	1	5/8
3/4	9	7	6	6	5	4	4	4	3	3	3	3	3	2	2	2	2	2	2	3/4
7/8	10	9	7	7	6	5	5	4	4	4	3	3	3	3	3	3	2	2	2	7/8
1	12	10	9	8	7	6	6	5	5	4	4	4	4	3	3	3	3	3	3	**1**
2	24	20	18	16	14	13	12	11	10	9	9	8	8	7	7	6	6	6	6	**2**
3	36	30	27	24	21	19	18	16	15	14	13	12	12	11	10	10	9	9	9	**3**
4	48	41	36	32	28	26	24	22	20	19	18	16	16	15	14	13	12	12	12	**4**
5	60	51	45	40	36	32	30	27	25	24	22	21	20	18	18	17	16	15	15	**5**
6	72	61	54	48	43	39	36	33	30	28	27	25	24	22	21	20	19	18	18	**6**
7	84	72	63	56	50	45	42	38	36	33	31	29	28	26	25	24	22	21	21	**7**
8	96	82	72	64	57	52	48	44	41	38	36	33	32	30	28	27	25	25	24	**8**
9	108	92	81	72	64	58	54	49	46	43	40	38	46	34	32	31	29	28	27	**9**
10	120	102	90	80	72	65	60	55	51	48	45	42	40	37	36	34	32	31	30	**10**
11	132	113	99	88	79	71	66	60	56	52	49	46	44	41	39	37	35	34	33	**11**
12	144	123	108	96	86	78	72	66	61	57	54	50	48	45	43	41	39	37	36	**12**
13	156	133	117	104	93	84	78	71	66	62	58	55	52	49	46	44	42	40	39	**13**
14	168	144	126	112	100	91	84	77	72	67	63	59	56	53	50	48	45	43	42	**14**
15	180	154	135	120	108	97	90	82	77	72	67	63	60	56	54	51	48	46	45	**15**
16	192	164	144	128	115	104	96	88	82	76	72	67	64	60	57	54	52	50	48	**16**
17	204	174	153	136	122	120	102	93	87	81	76	72	68	64	61	58	55	53	51	**17**
18	216	185	162	144	129	127	108	99	92	86	81	76	72	68	64	61	58	56	54	**18**
19	228	195	171	152	136	133	114	105	97	91	85	80	76	72	68	65	62	59	57	**19**
20	240	205	180	160	144	140	120	110	102	96	90	84	80	75	72	68	65	62	60	**20**
21	252	216	189	168	151	146	126	116	108	100	94	88	84	79	75	72	68	65	63	**21**
22	264	226	198	176	158	153	132	121	113	105	99	93	88	83	79	75	72	68	66	**22**
Points→	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**Col. inches**

Character per line calculator

Tables give quick and accurate method of determining in advance the amount of space that any given size of type will occupy when set up for printing

Compiled by the editors

The table on this and the following page should be used in conjunction with the data on pages 458 to 465. On those pages the characters per pica for almost every currently used type face is given in sizes up to and including 24 points. The table below shows how many characters of any type face will fit into a line of from one to thirty-two picas wide.

When properly used, these tables should enable the reader to almost instantly, accurately, and without using a pencil, determine the characters per line of any text type face. Furthermore, on page 455, there is a column depth calculator that shows how many lines of any depth there are to a column of any feasible length. By simply multiplying the data obtained therein on the number of lines in the column of a given layout times the figure obtained from the accompanying character per line table, the number of characters per column can be quickly ascertained.

To use the character per line tables:

1. Ascertain the characters per pica from the character per pica tables, see pages 458 to 465.

2. Locate the characters per pica in the vertical bold face column on the left or right edge of the tables below.

3. Read across to the column that is headed in bold figures by the number corresponding to the pica width of the line that it is to be set.

For example: Bodoni Book in nine-point has a character per pica count of 3.00. If it is to be set in a line measure of 13 picas, the table reveals the type characters per line to be 39.

It will be noticed by the reader that the character per pica figures in this table cover a range of .1. For most problems in copy fitting, the second place after the decimal is of little concern. However, in casting up a book or a long column of solid text matter, it would be wise to use exact character count. For paragraph-by-paragraph copy casting, which is recommended, the tables below will be found reliable.

Characters per pica	Line lengths in picas 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Characters per pica
1.2-1.29	2	3	4	6	7	8	9	10	12	13	14	15	16	18	19	20	21	22	24	25	26	27	28	30	31	32	33	34	36	37	38	**1.2-1.29**
1.3-1.39	2	3	5	6	7	9	10	11	13	14	15	16	18	19	20	22	23	24	26	27	28	30	31	32	33	35	36	37	39	40	41	**1.3-1.39**
1.4-1.49	2	4	5	7	8	9	11	12	14	15	16	17	19	21	22	23	25	26	28	29	30	32	33	35	36	37	39	40	42	43	44	**1.4-1.49**
1.5-1.59	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24	25	27	28	30	31	33	34	36	37	39	40	42	43	45	46	48	**1.5-1.59**
1.6-1.69	3	4	6	8	9	11	12	14	16	17	19	20	22	24	25	27	28	30	32	33	35	36	38	40	41	42	44	46	48	49	51	**1.6-1.69**
1.7-1.79	3	5	6	8	10	11	13	15	17	18	20	22	23	25	27	28	30	32	34	35	37	39	40	42	44	45	47	49	51	52	54	**1.7-1.79**
1.8-1.89	3	5	7	9	10	12	14	16	18	19	21	23	25	27	28	30	32	34	36	37	39	41	43	45	46	48	50	52	54	55	57	**1.8-1.89**
1.9-1.99	3	5	7	9	11	13	15	17	19	20	22	24	26	28	30	32	34	36	38	39	41	43	45	47	49	51	53	55	57	58	60	**1.9-1.99**
2.0-2.09	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	**2.0-2.09**
2.1-2.19	4	6	8	10	12	14	16	18	21	23	25	27	29	31	33	35	37	39	42	44	46	48	50	52	54	56	58	60	63	65	67	**2.1-2.19**
2.2-2.29	4	6	8	11	13	15	17	19	22	24	26	28	30	33	35	37	39	41	44	46	48	50	52	55	57	59	61	63	66	68	70	**2.2-2.29**
2.3-2.39	4	6	9	11	13	16	18	20	23	25	27	29	32	34	36	39	41	43	46	48	50	53	55	57	59	62	64	66	69	71	73	**2.3-2.39**
2.4-2.49	4	7	9	12	14	16	19	21	24	26	28	31	33	36	38	40	43	45	48	50	52	55	57	60	62	64	67	69	72	74	76	**2.4-2.49**
2.5-2.59	5	7	10	12	15	17	20	22	25	27	30	32	35	37	40	42	45	47	50	52	55	57	60	62	65	67	70	72	75	77	80	**2.5-2.59**
2.6-2.69	5	7	10	13	15	18	20	23	26	28	31	33	36	39	41	44	46	49	52	54	57	59	62	65	67	69	72	75	78	80	83	**2.6-2.69**
Characters per pica	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**Characters per pica**
	Line lengths in picas																															

Characters per pica	Line lengths in picas 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Characters per pica
2.7-2.79	5	8	10	13	16	18	21	24	27	29	32	35	37	40	43	45	48	51	54	56	59	62	64	67	70	72	75	78	81	83	86	**2.7-2.79**
2.8-2.89	5	8	11	14	16	19	22	25	28	30	33	36	39	42	44	47	50	53	56	58	61	64	67	70	72	75	78	81	84	86	89	**2.8-2.89**
2.9-2.99	5	8	11	14	17	20	23	26	29	31	34	37	40	43	46	49	52	55	58	60	63	66	69	72	75	78	81	84	87	89	92	**2.9-2.99**
3.0-3.09	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75	78	81	84	87	90	93	96	**3.0-3.09**
3.1-3.19	6	9	12	15	18	21	24	27	31	34	37	40	43	46	49	52	56	59	62	65	68	71	74	77	80	83	86	89	93	96	99	**3.1-3.19**
3.2-3.29	6	9	12	16	19	22	25	28	32	35	38	41	44	48	51	54	58	61	64	67	70	73	76	80	83	86	89	92	96	99	102	**3.2-3.29**
3.3-3.39	6	9	13	16	19	23	26	29	33	36	39	42	46	49	52	56	60	63	66	69	72	76	79	82	85	89	92	95	99	102	105	**3.3-3.39**
3.4-3.49	6	10	13	17	20	23	27	30	34	37	40	44	47	51	54	57	62	65	68	71	74	78	81	85	88	91	95	98	102	105	108	**3.4-3.49**
3.5-3.59	7	10	14	17	21	24	28	31	35	38	42	45	49	52	56	59	63	66	70	73	77	80	84	87	91	94	98	101	105	108	112	**3.5-3.59**
3.6-3.69	7	10	14	18	21	25	28	32	36	39	43	46	50	54	57	61	64	68	72	75	79	82	86	90	93	96	100	104	108	111	115	**3.6-3.69**
3.7-3.79	7	11	14	18	22	25	29	33	37	40	44	48	51	55	59	63	66	70	74	77	81	85	88	92	95	99	103	107	111	114	118	**3.7-3.79**
3.8-3.89	7	11	15	19	22	26	30	34	38	41	45	49	53	57	60	64	68	72	76	79	83	87	91	95	98	102	106	110	114	117	121	**3.8-3.89**
3.9-3.99	7	11	15	19	23	27	31	35	39	42	46	50	54	58	62	66	70	74	78	81	85	89	93	97	101	105	109	113	117	120	124	**3.9-3.99**
4.0-4.09	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	**4.0-4.09**
4.1-4.19	8	12	16	20	24	28	32	36	41	45	49	53	57	61	65	69	74	78	82	86	90	94	98	102	106	110	114	118	123	127	131	**4.1-4.19**
4.2-4.29	8	12	16	21	25	29	33	37	42	46	50	54	58	63	67	71	76	80	84	88	92	96	100	105	109	113	117	121	126	130	134	**4.2-4.29**
4.3-4.39	8	12	17	21	25	30	34	38	43	47	51	55	60	64	68	73	78	82	86	90	94	99	103	107	111	116	120	124	129	133	137	**4.3-4.39**
4.4-4.49	8	13	17	22	26	30	35	39	44	48	52	57	61	66	70	74	80	84	88	92	96	101	105	110	114	118	123	127	132	136	140	**4.4-4.49**
4.5-4.59	9	13	18	22	27	31	36	40	45	49	54	59	63	67	72	76	81	85	90	94	99	103	108	112	117	121	126	130	135	139	144	**4.5-4.59**
4.6-4.69	9	13	18	23	27	32	36	41	46	50	55	60	64	69	73	78	82	87	92	96	101	105	110	115	119	123	128	133	138	142	147	**4.6-4.69**
4.7-4.79	9	14	18	23	28	32	37	42	47	51	56	61	65	70	75	79	84	89	94	98	103	108	112	117	122	126	131	136	141	145	150	**4.7-4.79**
4.8-4.89	9	14	19	24	28	33	38	43	48	52	57	62	67	72	76	81	86	91	96	100	105	110	115	120	124	129	134	139	144	148	153	**4.8-4.89**
4.9-4.99	9	14	19	24	29	34	39	44	49	53	58	63	68	73	78	83	88	93	98	102	107	112	117	122	127	132	137	142	147	151	156	**4.9-4.99**
5.0-5.09	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	**5.0-5.09**
5.1-5.19	10	15	20	25	30	35	40	45	51	56	61	66	71	76	81	86	92	97	102	107	112	117	122	127	132	137	142	147	153	158	163	**5.1-5.19**
5.2-5.29	10	15	20	26	31	36	41	46	52	57	62	67	72	78	83	88	94	99	104	109	114	119	124	130	135	140	145	150	156	161	166	**5.2-5.29**
5.3-5.39	10	15	21	26	31	37	41	47	53	58	63	68	74	79	84	90	96	101	106	111	116	122	127	132	137	143	148	153	159	164	169	**5.3-5.39**
5.4-5.49	10	16	21	27	32	37	42	48	54	59	64	70	75	81	86	92	98	103	108	113	118	124	129	135	140	145	151	156	162	167	172	**5.4-5.49**
5.5-5.59	11	16	22	27	33	38	44	49	55	60	66	71	77	82	88	93	99	104	110	115	121	125	132	137	143	148	154	159	165	170	176	**5.5-5.59**
5.6-5.69	11	16	22	28	33	39	44	50	56	61	67	72	78	84	89	95	100	106	112	117	123	128	134	140	145	151	156	162	168	173	179	**5.6-5.69**
5.7-5.79	11	17	22	28	34	39	45	51	57	62	68	73	79	85	91	96	102	108	114	119	125	130	136	142	148	153	159	165	171	176	182	**5.7-5.79**
5.8-5.89	11	17	23	29	34	40	46	52	58	63	69	75	81	87	92	98	104	110	116	121	127	133	139	145	150	156	162	168	174	179	185	**5.8-5.89**
5.9-5.99	11	17	23	29	35	41	47	53	59	64	70	76	82	88	94	100	106	112	118	123	129	135	141	147	153	159	165	171	177	182	188	**5.9-5.99**
6.0-6.09	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	**6.0-6.09**

Characters per pica	Line lengths in picas 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Characters per pica

Character per pica tables

Lower case character count for sizes up to and including 24-point for approximately 700 text and display type faces of all the leading manufacturers

Compiled by the editors

American

Adonis

8	3.29
10	2.97
12	2.45
14	2.12
18	1.68
24	1.22

Alternate Gothic No. 1

6	5.65
8	4.71
10	3.69
12	3.32
14	2.83
18	2.33
24	1.8

Alternate Gothic No. 2

6	5.14
8	4.27
10	3.24
12	2.96
14	2.48
18	1.97
24	1.56

Alternate Gothic No. 3

6	4.37
8	3.77
10	2.85
12	2.51
14	2.13
18	1.75
24	1.35

American Text

18	2.06
24	1.66

Announcement Roman

6	3.93
8	3.37
10	2.97
12	2.61
14	2.35
18	1.85
24	1.42

Announcement Italic

6	3.82
8	3.34
10	2.87
12	2.55
14	2.31
18	1.79
24	1.39

Antique Shaded

8	2.36
10	1.9
12	1.69
14	1.4
18	1.12
24	.87

Authors Roman

6	3.84
8	3.19
10	2.71
12	2.16

Baskerville Roman

6	4.96
8	3.78
10	3.23
12	2.6
14	2.21
18	1.87
18±2	1.55
24	1.39

Baskerville Italic

6	5.
8	3.85
10	3.52
12	2.85
14	2.4
18	2.05
18±2	1.72
24	1.72

Benton

6	3.63
8	3.12
10	2.73
12	2.28
14	1.99
18	1.58
24	1.19

Bernhard Booklet

8	3.56
10	2.98
12	2.53
14	2.15
18	1.73
24	1.31

Bernhard Fashion

12	3.04
14	2.56
18	2.05
24	1.58

Bernhard Gothic Light

6	4.3
8	3.65
10	2.95
12	2.61
14	2.15
18	1.77
24	1.31

Bernhard Gothic Light Italic

6	4.57
8	3.82
10	3.13
12	2.72
14	2.32
18	1.88
24	1.41

Bernhard Gothic Medium

6	4.26
8	3.75
10	2.96
12	2.64
14	2.29
18	1.75
24	1.33

Bernhard Gothic Medium Italic

6	4.26
8	3.61
10	2.94
12	2.61
14	2.17
18	1.74
24	1.31

Bernhard Gothic Medium Condensed

12	3.35
14	2.74
18	2.19
24	1.68

Bernhard Gothic Heavy

8	3.34
10	2.73
12	2.41
14	2.03
18	1.62
24	1.21

Bernhard Gothic Extra Heavy

12	2.18
14	1.81
18	1.44
24	1.07

Bernhard Modern Roman

8	3.59
10	2.99
12	2.54
14	2.15
18	1.74
24	1.31

Bernhard Modern Italic

8	3.71
10	3.06
12	2.63
14	2.25
18	1.82
24	1.4

Bernhard Modern Bold

8	3.43
10	2.73
12	2.35
14	1.96
18	1.58
24	1.2

Bernhard Modern Bold Italic

8	3.46
10	2.92
12	2.45
14	2.1
18	1.64
24	1.27

Bernhard Tango

18	2.04
24	1.58

Bodoni

6	4.3
8	3.18
10	2.63
12	2.36
14	2.12
18	1.65
24	1.28

Bodoni Italic

6	4.28
8	3.17
10	2.71
12	2.39
14	2.14
18	1.68
24	1.3

Bodoni Bold

6	3.92
8	2.95
10	2.5
12	2.19
14	1.97
18	1.53
24	1.18

Bodoni Bold Italic

6	4.02
8	2.95
10	2.51
12	2.24
14	1.98
18	1.57
24	1.21

Bodoni Book

6	4.52
8	3.42
10	2.91
12	2.58
14	2.34
18	1.83
24	1.43

Bodoni Book Italic

6	4.66
8	3.46
10	2.96
12	2.66
14	2.35
18	1.83
24	1.42

Bodoni Open

10	2.59
12	2.32
14	2.07
18	1.61
24	1.25

Bookman Old Style

6	3.59
8	3.18
10	2.67
12	2.24
14	1.89
18	1.42
24	.95

Bookman Italic

6	3.6
8	3.02
10	2.44
12	1.96
14	1.74
18	1.35
24	.95

Broadway Condensed

6	2.94
8	2.55
10	2.13
12	1.86
14	1.55
18	1.24
24	.98

Brush

12	2.65
14	2.25
18	1.83
24	1.41

Bulmer Roman

6	3.8
8	3.24
10	2.82
12	2.51
14	2.24
18	1.76
24	1.36

Bulmer Italic

6	4.06
8	3.46
10	3.
12	2.67
14	2.37
18	1.9
24	1.46

Camelot Oldstyle

6	3.76
8	3.23
10	2.57
12	2.37
18	1.75
24	1.29

Canterbury

12	3.49
14	3.21
18	2.48
24	1.94

Caslon Old Style No. 471

6	4.23
8	4.04
9	3.32
10	3.29
11	2.79
12	2.44
14	2.17
18	1.75
22	1.56
24	1.3

Caslon Old Style No. 471 Italic

6	4.36
8	3.95
9	3.33
10	3.26
11	3.04
12	2.63
14	2.39
18	1.95
22	1.7
24	1.49

Caslon No. 540

6	4.59
8	3.39
10	2.91
11	2.56
12	2.21
14	1.86
18	1.49
24	1.06

Caslon No. 540 Italic

6	4.86
8	3.39
10	3.16
11	2.76
12	2.38
14	1.99
18	1.59
24	1.16

Caslon Bold

6	3.36
8	2.77
10	2.22
12	1.94
14	1.59
18	1.27
24	.98

Caslon Bold Italic

6	3.41
8	2.74
10	2.2
12	1.96
14	1.62
18	1.25
24	.97

Caslon Bold Condensed

6	4.22
8	3.51
10	2.85
12	2.47
14	2.03
18	1.71
24	1.33

Caslon Heavy

6	3.28
8	2.89
10	2.29
12	2.
14	1.66
18	1.31
24	1.04

Caslon New

5	4.61
6	3.89
8	3.15
10	2.43
12	2.09
14	1.74
18	1.35
24	1.04

Caslon New Italic

6	4.28
8	3.54
10	2.73
12	2.34
14	1.96
18	1.53
24	1.19

Caslon Openface

8	3.59
10	2.97
12	2.45
14	2.
18	1.61

Caslon Recut

6	3.98
8	3.24
10	2.6
12	2.2
14	1.93
18	1.49
24	1.16

Century Catalogue

6	3.99
8	3.31
10	2.74
12	2.38
14	1.98
18	1.6
24	1.26

Century Catalogue Italic

6	3.77
8	3.19
10	2.66
12	2.36
14	1.99
18	1.6

Century Old Style

6	3.69
8	3.15
9	2.71
10	2.47
11	2.37
12	2.23
14	1.84
18	1.47
24	1.17

Century Old Style Italic

6	4.02
8	3.44
9	3.01
10	2.66
11	2.53
12	2.38
14	1.95
18	1.56
24	1.21

Century Oldstyle Bold

6	3.17
8	2.72
10	2.12
12	1.9
14	1.58
18	1.26
24	1.

Century Old Style Bold Italic

6	3.20
8	2.74
10	2.12
12	1.89
14	1.59
18	1.27
24	1.01

Century Expanded

4	4.96
4½	4.96
5	4.28
5½	3.72
6	3.7
7	3.43
8	2.96
9	2.73
10	2.45
11	2.37
12	2.14
14	1.78
18	1.41
24	1.09

Century Expanded Italic

4	5.67
4½	5.67
5	4.21
5½	3.78
6	3.82
7	3.53
8	3.05
9	2.74
10	2.61
11	2.43
12	2.23
14	1.84
18	1.46
24	1.12

Century Bold

6	3.73
8	2.92
10	2.48
12	2.09
14	1.77
18	1.41
24	1.11

Century Bold Cond.

6	4.63
8	4.07
10	3.21
12	2.87
14	2.43
18	1.97
24	1.56

Century Bold Italic

6	3.71
8	2.92
10	2.37
12	2.01
14	1.66
18	1.36
24	1.06

Century Schoolbook

6	3.66
8	2.97
10	2.43
12	2.12
14	1.75
16	1.55
18	1.4
24	1.1

Century Schoolbook Italic

6	3.70
8	2.99
10	2.46
12	2.17
14	1.81
16	1.60
18	1.44
24	1.13

Century Schoolbook Bold

6	3.3
8	2.66
10	2.18
12	1.98
14	1.58
16	1.40
18	1.26
24	.99

Cheltenham Old Style

6	4.57
8	3.85
10	3.19
12	2.72
14	2.25
18	1.81
24	1.42

Cheltenham Italic

6	4.41
8	3.74
10	3.06
12	2.64
14	2.13
18	1.76
24	1.37

Cheltenham Medium

6	3.87
8	3.21
10	2.62
12	2.34
14	1.95
18	1.59
24	1.26

Cheltenham Medium Italic

6	3.97
8	3.31
10	2.62
12	2.36
14	1.96
18	1.57
24	1.23

Cheltenham Wide

6	3.88
8	3.23
10	2.63
12	2.35
14	1.95
18	1.56
24	1.22

Cheltenham Bold

6	3.6
8	3.07
10	2.43
12	2.18
14	1.8
18	1.46
24	1.15

Cheltenham Bold Italic

6	3.59
8	3.04
10	2.29
12	2.12
14	1.77
18	1.4
24	1.1

Cheltenham Bold Condensed

6	4.6
8	3.88
10	3.04
12	2.71
14	2.23
18	1.81
24	1.45

Cheltenham Bold Condensed Italic

10	3.00
14	2.24
18	1.81
24	1.36

Cheltenham Bold Extra Condensed

6	5.66
8	4.17
10	3.84
12	3.38
14	2.87
18	2.29
24	1.84

Cheltenham Bold Extended

6	2.66
8	2.31
10	1.79
12	1.61
14	1.34
18	1.07
24	.84

Civilite

10	4.13
12	3.71
14	3.33
18	2.65
24	2.07

Cloister Old Style

6	4.35
8	3.66
10	3.11
12	2.79
14	2.50
18	1.95
24	1.51

Cloister Italic

6	4.86
8	4.05
10	3.5
12	3.11
14	2.79
18	2.19
24	1.71

Left-hand column lists point sizes. Right-hand column lists lower-case characters per pica.

American, continued

Cloister Lightface

6	4.38
8	3.68
10	3.11

Cloister Lightface Italic

6	4.75
8	3.93
10	3.42

Cloister Bold

6	3.92
8	3.26
10	2.79
12	2.52
14	2.22
18	1.75
24	1.35

Cloister Bold Italic

6	4.19
8	3.47
10	3.01
12	2.7
14	2.4
18	1.86
24	1.46

Cloister Black

6	4.26
8	3.71
10	2.83
12	2.49
14	2.13
18	1.67
24	1.35

Comstock

14	1.46
18	1.15
24	.89

Cooper

6	3.93
8	3.54
10	2.78
12	2.47
14	1.91
16	1.64
18	1.55
24	1.16

Cooper Italic

6	4.12
8	3.37
10	2.83
12	2.38
14	1.97
16	1.7
18	1.48
24	1.25

Cooper Black

6	2.95
8	2.6
10	2.03
12	1.75
14	1.42
18	1.09
24	.83

Cooper Black Italic

6	3.37
8	2.78
10	2.2
12	1.89
14	1.58
18	1.2
24	.91

Della Robbia

6	4.52
8	3.75
10	2.8
12	2.5
14	1.96
18	1.56
24	1.21

Engravers Old English

6	3.85
8	3.29
10	2.82
12	2.41
14	2.07
18	1.63
24	1.26

Franklin Gothic

4	4.56
5	3.93
6	3.15
8	2.66
10	2.1
12	1.89
14	1.63
18	1.26
24	.98

Franklin Gothic Italic

5	3.80
6	3.15
8	2.7
10	2.07
12	1.84
14	1.52
18	1.22
24	.96

Franklin Gothic Condensed

6	3.48
8	3.03
10	2.4
12	2.21
14	1.87
18	1.51
24	1.2

Franklin Gothic Extra Condensed

6	4.12
8	3.6
10	2.96
12	2.76
14	2.31
18	1.92
24	1.54

Freehand

6	3.98
8	3.38
10	2.97
12	2.64
14	2.37
18	1.86
24	1.42

Garamond

6	3.6
8	3.3
10	2.90
12	2.55
14	2.29
16	1.97
18	1.77
24	1.37

Garamond Italic

6	4.32
8	3.71
10	3.26
12	2.88
14	2.59
16	2.25
18	2.
24	1.57

Garamond Bold

6	3.6
8	3.01
10	2.6
12	2.31
14	2.08
16	1.81
18	1.6
24	1.23

Garamond Bold Italic

6	3.91
8	3.32
10	2.86
12	2.51
14	2.26
16	1.97
18	1.77
24	1.37

Garamond Open

18	1.73
24	1.33

Gothic No. 544

6	3.11
8	2.87
10	2.44
12	1.92
14	1.65
18	1.36
24	1.13

Gothic No. 545

6	2.98
8	2.77
10	1.98
12	1.81
14	1.51
18	1.3
24	1.06

Gothic No. 578

6	3.4
8	2.81
10	2.07
12	1.8
14	1.52
18	1.16
24	.91

Gothic Condensed No. 523

6	3.97
8	3.57
10	2.97
12	2.36
14	2.17
18	1.95
24	1.51

Gothic Condensed No. 524

6	4.88
8	4.42
10	3.37
12	2.87
14	2.31
18	1.7
24	1.54

Gothic Condensed No. 529

6	4.94
8	4.59
10	3.9
12	3.58
14	2.91
18	2.49
24	2.03

Gothic Lightline

8	3.42
10	2.75
12	2.4
14	2.04
18	1.64
24	1.29

Gothic News

6	3.42
8	3.05
10	2.53
12	2.27
14	1.87
18	1.5
24	1.2

Gothic News Condensed

6	4.2
8	3.76
10	3.13
12	2.87
14	2.44
18	1.95
24	1.58

Gothic News Extra Cond.

6	6.01
8	5.56
10	4.8
12	4.37
14	3.73
18	2.99
24	2.42

Goudy Old Style

6	3.98
8	3.21
10	2.68
12	2.35
14	1.98
18	1.56
24	1.24

Goudy Italic

6	4.46
8	3.61
10	3.01
12	2.62
14	2.18
18	1.74
24	1.38

Goudy Catalogue

6	3.85
8	3.13
10	2.58
12	2.24
14	1.86
18	1.49
24	1.18

Goudy Catalogue Italic

6	4.1
8	3.31
10	2.75
12	2.37
14	2.
18	1.6
24	1.26

Goudy Cursive

Allow for Swashes

6	4.44
8	3.61
10	3.
12	2.62
14	2.19
18	1.74
24	1.38

Goudy Bold

6	3.69
8	3.
10	2.46
12	2.15
14	1.78
18	1.42
24	1.13

Goudy Bold Italic

6	3.81
8	3.1
10	2.65
12	2.23
14	1.86
18	1.49
24	1.18

Goudy Extra Bold

6	3.42
8	2.78
10	2.29
12	2.
14	1.66
18	1.33
24	1.04

Goudy Handtooled

10	2.46
12	2.15
14	1.79
18	1.42
24	1.13

Goudytype

6	3.68
8	3.03
10	2.47
12	2.15
14	1.74
18	1.44
24	1.13

Gravure

12	2.06
14	1.85
18	1.47
24	1.17

Grayda

18	2.54
24	2.00

Greeting Monotone

10	3.03
12	2.76
14	2.46
18	1.92
24	1.53

Hobo

6	3.65
8	2.75
10	2.26
12	1.88
14	1.62
18	1.34
24	.99

Hollywood

6	3.57
8	3.18
10	2.68
12	2.4
14	2.03
18	1.68
24	1.32

Invitation

6	3.14
8	2.66
10	2.33
12	2.07
14	1.87
18	1.46
24	1.13

Invitation Shaded

8	2.55
10	2.25
12	2.
14	1.8
18	1.39
24	1.1

Kaufmann Script

Allow for Swashes

10	3.12
12	2.84
14	2.54
18	1.94
24	1.5

Kaufmann Bold

10	2.85
12	2.58
14	2.32
18	1.77
24	1.37

Keynote

Allow for Swashes

24	1.86

Liberty

Allow for Swashes

12	3.7
14	3.08
18	2.54
24	2.07

Litho Light

8	2.61
10	1.97
12	1.77
14	1.5
18	1.21
24	.92

Litho Roman

6	3.13
8	2.65
10	2.01
12	1.77
14	1.47
18	1.19
24	.92

Lydian

10	2.72
12	2.28
14	2.
18	1.6
24	1.2

Lydian Italic

10	2.97
12	2.51
14	2.22
18	1.77
24	1.35

Lydian Bold

10	2.7
12	2.26
14	2.02
18	1.59
24	1.2

Lydian Bold Italic

10	2.83
12	2.32
14	2.08
18	1.66
24	1.26

Lydian Cursive

18	1.91
24	1.47

Newport

6	5.01
8	4.35
10	3.64
12	3.08
14	2.66
18	2.23
24	1.68

Nicholas Cochin

6	3.83
8	3.36
10	2.9
12	2.65
14	2.31
18	1.98
18±2	1.69
24	1.37

Nicholas Cochin Italic

6	4.06
8	3.46
10	3.02
12	2.84
14	2.37
18	2.1
18±2	1.83
24	1.52

Nubian

6	2.16
8	1.72
10	1.4
12	1.2
14	.99
18	.78
24	.62

Othello

18	1.55
24	1.28

Paramount

6	4.37
8	3.76
10	2.96
12	2.61
14	2.22
18	1.78
24	1.41

Parisian

10	3.3
12	3.02
14	2.53
18	2.03
24	1.64

Park Avenue

Allow for Swashes

12	2.83
14	2.54
18	2.07
24	1.64

Parsons

6	3.75
8	3.21
10	2.82
12	2.39
14	1.96
18	1.54
24	1.18

Phenix

24	2.41

Piranesi

8	3.89
10	3.09
12	2.85
14	2.43
18	1.94
24	1.48

Piranesi Italic

Allow for Swashes

8	4.62
10	3.68
12	3.38
14	2.85
18	2.33
24	1.78

Piranesi Bold

6	4.03
8	3.5
10	2.74
12	2.47
14	2.06
18	1.67
24	1.26

Piranesi Bold Italic

Allow for Swashes

6	4.48
8	3.84
10	3.08
12	2.79
14	2.39
18	1.89
24	1.48

Raleigh Cursive

Allow for Swashes

10	4.04
12	3.28
14	3.04
18	2.36
24	1.78

Rivoli

10	3.48
12	3.1
14	2.6
18	2.12
24	1.68

Rivoli Italic

10	3.28
12	2.95
14	2.51
18	2.03
24	1.65

Romany

Allow for Swashes

12	2.36
14	2.17
18	1.73
24	1.36

Schoolbook Oldstyle

6	3.62
8	2.97
10	2.41
12	2.1
14	1.75
18	1.4
24	1.1

Scotch Roman

6	3.61
8	3.18
10	2.86
11	2.7
12	2.26
14	1.87
18	1.46
24	1.12

Shaw Text

10	3.25
12	2.82
14	2.49
18	1.76
24	1.35

Spartan Black

6	3.32
8	3.08
10	2.39
12	1.99
14	1.75
18	1.36
24	1.07

Spartan Black Italic

6	3.35
8	3.08
10	2.39
12	1.99
14	1.75
18	1.36
24	1.08

Spartan Black Condensed

10	2.90
12	2.65
14	2.43
18	1.97
24	1.55

Spartan Black Condensed Italic

10	2.90
12	2.65
14	2.44
18	2.07
24	1.59

Spartan Heavy

6	3.89
8	3.35
10	2.61
12	2.05
14	2.02
18	1.61
24	1.25

Spartan Heavy Italic

6	3.84
8	3.52
10	2.61
12	2.05
14	2.02
18	1.61
24	1.24

Spartan Medium

6	3.84
8	3.66
10	2.92
12	2.50
14	2.16
18	1.68
24	1.39

Spartan Medium Italic

6	3.89
8	3.66
10	2.92
12	2.51
14	2.17
18	1.65
24	1.42

Stymie Light

6	3.79
8	3.21
10	2.41
10 ±2	2.76
12	2.18
14	1.81
18	1.43
18 ±2	1.61
24	1.15

Stymie Light Italic

6	3.62
8	3.02
10	2.35
10 ±2	2.66
12	2.07
14	1.73
18	1.38
18 ±2	1.54
24	1.1

Stymie Medium

6	3.59
8	3.
10	2.28
10 ±2	2.61
12	2.05
14	1.71
18	1.38
18 ±2	1.52
24	1.08

Stymie Medium Italic

6	3.58
8	2.92
10 ±2	2.54
10	2.23
12	2.03
14	1.66
18	1.32
18 ±2	1.47
24	1.06

Stymie Bold

6	3.36
8	2.92
10	2.29
12	2.02
14	1.67
18	1.31
18 ±2	1.48
24	1.03

Stymie Bold Italic

6	3.28
8	2.86
10	2.22
12	1.98
14	1.63
18	1.29
18 ±2	1.44
24	1.01

Stymie Bold Condensed

12	2.68
14	2.28
18	1.85
24	1.47

Stymie Black

12	1.74
14	1.45
18	1.16
24	.93

Stymie Black Italic

12	1.66
14	1.4
18	1.12
24	.89

Tower

12	3.15
14	2.67
18	2.11
24	1.69

Typo Roman

10	3.6
12	3.21
14	2.92

Typo Roman Shaded

12	3.24
14	2.94

Typo Shaded

14	3.17
18	2.48

Typo Text

8	3.74
10	2.86
12	2.51
14	2.14
18	1.72
24	1.32

Typo Upright

12	3.62
14	3.34
18	2.56

Ultra Bodoni

6	2.57
8	2.18
10	1.97
12	1.56
14	1.46
18	1.12
24	.82

Ultra Bodoni Italic

6	2.55
8	2.18
10	1.98
12	1.57
14	1.43
18	1.13
24	.84

Ultra Bodoni Condensed

18	1.3
24	.95

Ultra Bodoni Extra Cond.

12	2.15
14	1.95
18	1.66
24	1.23

Waldorf Text

14	2.86
18	2.49

Wedding Text

6	4.59
8	3.71
10	3.01
12	2.7
14	2.47

Left-hand column lists point sizes. Right-hand column lists lower case characters per pica.

Bauer

Bauer Text
8	3.56
10	3.00
11	2.65
12	2.48
14	2.24
16	1.9
18	1.66
24	1.24

Bernhard Cursive
Allow for Swashes

12	3.44
14	2.87
16	2.6
18	2.39
24	2.13

Bernhard Cursive Bold
Allow for Swashes

14	2.71
16	2.43
18	2.07
24	1.95

Bernhard Roman
10	3.55
12	3.03
14	2.74
16	2.44
18	2.14
20	1.88
24	1.69

Bernhard Italic
10	3.45
12	2.97
14	2.7
16	2.36
18	2.16
20	1.82
24	1.67

Beton Light
8	3.94
10	3.02
12	2.46
14	2.06
16	1.75
18	1.66
24	1.36

Beton Medium
8	3.62
10	2.78
12	2.33
14	1.96
16	1.63
18	1.54
24	1.26

Beton Bold
8	3.32
10	2.52
12	2.05
14	1.79
16	1.49
18	1.4
24	1.11

Beton Bold Condensed
14	1.99
16	1.67
18	1.56
24	1.23

Beton Extra Bold
14	1.63
16	1.31
18	1.22
24	1.02

Bodoni
8	3.91
10	3.24
11	3.04
12	2.63
14	2.19
16	1.83
18	1.63
24	1.36

Bodoni Italic
8	3.98
10	3.31
11	3.
12	2.6
14	2.23
16	1.88
18	1.62
24	1.33

Bodoni Bold
8	3.52
10	2.98
11	2.7
12	2.44
14	2.05
16	1.64
18	1.55
24	1.26

Cartoon
6	2.71
8	1.91
10	1.5
12	1.3
14	1.1
18	.91
24	.63

Cartoon Bold
6	2.59
8	1.78
10	1.39
12	1.24
14	1.06
18	.86
24	.65

Corvinus Light
8	4.59
10	3.64
12	2.99
14	2.55
16	2.12
18	1.94
24	1.54

Corvinus Light Italic
8	4.72
10	3.69
12	3.01
14	2.76
16	2.33
18	2.1
24	1.7

Corvinus Medium
8	3.88
10	2.89
12	2.44
14	2.21
16	1.88
18	1.66
24	1.34

Corvinus Medium Italic
8	3.88
10	2.97
12	2.43
14	2.24
16	1.9
18	1.7
24	1.34

Corvinus Bold
8	3.39
10	2.61
12	2.1
14	1.99
16	1.64
18	1.49
24	1.19

Corvinus Skyline
10	3.26
12	2.72
14	2.54
16	2.15
18	1.97
24	1.7

Elizabeth
8	4.07
10	3.36
11	3.04
12	2.74
14	2.34
16	2.13
18	1.9
24	1.58

Elizabeth Italic
8	4.07
10	3.57
11	3.16
12	3.04
14	2.74
16	2.34
18	2.28
24	1.82

Futura Light
6	4.64
8	3.79
10	3.08
12	2.63
14	2.29
16	1.92
18	1.78
24	1.38

Futura Light Oblique
8	4.19
10	3.29
12	2.67
14	2.39
16	2.06
18	1.89
24	1.46

Futura Medium
6	4.31
8	3.65
10	2.91
12	2.44
14	2.15
16	1.78
18	1.62
24	1.33

Futura Medium Oblique
8	3.76
10	2.93
12	2.59
14	2.18
16	1.82
18	1.69
24	1.34

Futura Medium Condensed
8	4.75
10	3.56
12	3.00
14	2.71
16	2.38
18	2.11
24	1.84

Futura Demibold
8	3.54
10	2.63
12	2.31
14	2.04
16	1.69
18	1.53
24	1.24

Futura Bold
8	3.19
10	2.43
12	2.02
14	1.76
16	1.47
18	1.37
24	1.06

Futura Bold Oblique
8	3.17
10	2.38
12	1.91
14	1.72
16	1.46
18	1.36
24	1.06

Futura Bold Condensed
8	3.94
10	3.18
12	2.83
14	2.54
16	2.2
18	2.02
24	1.61

Futura Display
14	2.
16	1.72
18	1.53
24	1.23

Futura Black
20	1.12
24	.97

Gillies Gothic Light
Allow for Swashes

18	2.36
24	1.81

Gillies Gothic Bold
Allow for Swashes

18	2.03
24	1.53

Legend
18	2.38
20	2.11
24	1.73

Lucian
10	2.93
12	2.58
14	2.32
16	2.09
18	1.92
20	1.63
24	1.42

Lucian Italic
10	3.
12	2.56
14	2.25
16	2.05
18	1.88
20	1.58
24	1.4

Trafton Script
Allow for Swashes

14	3.27
16	2.8
18	2.47
24	1.96

Weiss Roman
8	3.76
10	3.16
11	2.93
12	2.58
14	2.27
16	1.92
18	1.7
24	1.37

Weiss Italic
Allow for Swashes

8	4.54
10	3.51
11	3.38
12	2.92
14	2.66
16	2.3
18	2.09
24	1.69

Weiss Roman Bold
8	3.67
10	3.02
11	2.78
12	2.44
14	2.06
16	1.8
18	1.59
24	2.2

BALTIMORE Britannic
14	2.07
18	1.63
24	1.21

Elegante
10	4.00
12	3.45
14	2.59
18 ±1	2.37
18 ±2	2.15
24	1.75
24 ±2	1.46

Homewood
(Capitals)

18	.74
24	.65

Tourist Ex. Cond.
24	2.37

NEON Neon
(Capitals)

18	.92
24	.76

RUTTLE, SHAW & WETHERILL Bam Stencil
(Capitals)

18	.73
24	.57

Intertype

Adonis
10	3.11
12	2.57
14	2.26
18	1.72

Alternate Gothic I
10	3.8
12	3.29
14	2.8
18	2.35
24	1.78

Antique No. 1 with Italic
6	3.52
7	3.2
8	2.81
10	2.43
12	2.08
14	1.81
18	1.51
24	1.12

Baskerville with Italic
6	3.92
8	3.18
9	3.06
10	2.78
11	2.63
12	2.33
14	2.03
18	1.8
24	1.3

Baskerville Bold
6	3.83
8	3.14
9	3.03
10	2.73
11	2.58
12	2.29
14	2.03

Bernhard Fashion
12	2.94
14	2.54
18	2.03

Beton Bold
8	3.48
9	2.97
10	2.65
11	2.35
12	2.12
14	1.91
18	1.48
24	1.20

Beton Medium
8	3.49
9	2.99
10	2.64
11	2.35
12	2.13
14	1.93
18	1.53
24	1.2

Beton Extra Bold
8	2.42
10	2.04
12	1.7
14	1.49
18	1.22
24	1.02

Beton Extra Bold Italic
8	2.35
10	1.99
12	1.67
14	1.45
18	1.21
24	1.00

Beton Wide
8	2.42
10	2.04
12	1.7
14	1.49
18	1.22
24	1.04

Bodoni with Italic
6	4.17
8	3.13
10	2.6
12	2.36
14	2.11
18	1.64
24	1.28

Bodoni Book with Italic
6	4.21
8	3.32
10	2.78
12	2.5
14	2.26

Bodoni Bold
6	3.72
8	2.91
10	2.45
12	2.18
14	1.95
16	1.74
18	1.53
24	1.52

Bodoni Bold Condensed
18	1.93
24	1.52

Bodoni Modern with Italic
8	2.42
10	1.97
12	1.56
14	1.43
18	1.17
24	.9

Bookface with Italic
6	3.69
7	3.41
8	2.95
9	2.9
10	2.6
11	2.36
12	2.1
14	1.81
18	1.46
24	1.01

Cairo
6	3.57
8	3.03
10	2.55
12	2.09
14	1.78
18	1.46
24	1.13

Cairo Italic
6	3.56
8	3.02
10	2.54
12	2.06
14	1.77
18	1.45
24	1.09

Cairo Heavy
6	3.53
8	2.97
10	2.46
12	2.00
14	1.71
18	1.4

Cairo Medium
6	3.56
8	3.13
10	2.63
12	2.07
14	1.76
18	1.45
24	1.11

Cairo Medium Italic
6	3.55
8	3.13
10	2.57
12	2.06
14	1.76
18	1.44
24	1.1

Cairo Bold
6	3.52
8	3.05
10	2.58
12	2.07
14	1.78
18	1.4
24	1.11

Cairo Bold Italic
6	3.52
8	3.02
10	2.54
12	2.05
14	1.76
18	1.4
24	1.1

Cairo Bold Condensed
8	3.45
10	2.97
12	2.46
14	2.11
18	1.76
24	1.42

Cairo Extra Bold Condensed
10	3.00
12	2.46
14	2.11
18	1.73
24	1.41

Cairo Medium Condensed
10	3.00
12	2.46
14	2.11
18	1.73
24	1.41

Caslon with Italic
6	3.9
8	3.2
10	2.82
11	2.45
12	2.2
14	1.91
18	1.43
24	1.07

Caslon Old Face
18	1.86
24	1.32

Caslon No. 3 with Italic
6	3.83
8	3.17
10	2.46
12	2.08
14	1.78
18	1.27
24	1.02

Century Expanded with Italic
4	4.89
6	3.6
7	3.2
8	2.87
9	2.68
10	2.41
12	2.11
14	1.78
18	1.5
24	1.13

Century Bold with Italic
6	3.6
7	3.10
8	2.96
10	2.35
12	2.03
14	1.7
18	1.55
24	1.11

Cheltonian with Italic
7	3.89
8	3.55
10	2.98
12	2.53
14	2.16
18	1.81
24	1.46

Cheltonian Bold with Italic
6	3.42
8	2.86
10	2.3
12	2.08
14	1.77
18	1.51
24	1.15

Cheltonian Condensed
8	3.61
10	2.96
12	2.59
14	2.2

Cheltonian Bold Cond.
8	3.61
10	2.96
12	2.58
14	2.2
18	1.81
24	1.46

Cheltonian Bold Extra Condensed
14	2.73
18	2.21
24	1.78

Cheltonian Medium Condensed
18	1.88
24	1.48

Cheltonian Medium with Italic
8	3.2
10	2.61
11	2.44
12	2.34
13	2.11
14	1.96
18	1.57
24	1.22

Cheltonian Wide
6	3.4
8	2.99
10	2.53
12	2.26
14	1.81
18	1.59
24	1.23

Cloister Old Style with Italic
6	4.31
8	3.72
10	3.17
12	2.86
14	2.6
18	1.96
24	1.51

Cloister Bold with Italic
6	3.8
8	3.2
10	2.76
12	2.45
14	2.2
18	1.74
24	1.35

DeVinne with Italic
6	3.68
8	3.13
9	2.93
10	2.61
11	2.31
12	2.11

Egmont with Italic
8	3.65
10	2.98
12	2.6
14	2.27
18	1.73
24	1.31

Left-hand column lists point sizes. Right-hand column lists lower-case characters per pica.

Intertype, continued

Egmont Medium with Italic

8	3.67
10	2.73
12	2.39
14	1.97
18	1.5
24	1.26

Egmont Bold with Italic

8	3.38
10	2.71
12	2.37
14	2.
18	1.51
24	1.21

Elzevir

8	2.99
10	2.58
12	2.23
14	1.82

Engravers Text

10	3.45
12	2.94
14	2.5
16	2.12

Futura Bold

6	3.64
8	3.11
10	2.43
12	1.98
14	1.75
18	1.41
24	1.04

Futura Bold Oblique

6	3.64
8	3.11
10	2.43
12	1.98
14	1.75
18	1.37
24	1.04

Futura Bold Cond.

6	4.82
8	3.72
10	3.11
12	2.77
14	2.48
18	1.9
24	1.61

Futura Book

6	4.38
8	3.88
10	3.03
12	2.59
14	2.21

Futura Book Oblique

6	4.38
8	3.88
10	3.03
12	2.59
14	2.21

Futura Demibold

6	4.02
8	3.49
10	2.59
12	2.3
14	2.01
18	1.52
24	1.23

Futura Demibold Oblique

6	4.02
8	3.49
10	2.59
12	2.3
14	2.01
18	1.52
24	1.23

Futura Light

6	4.44
8	3.76
10	3.09
12	2.59
14	2.26

Futura Light Oblique

6	4.44
8	3.76
10	3.09
12	2.59
14	2.26

Futura Medium

6	4.22
8	3.6
10	2.87
12	2.42
14	2.11
16	1.76
18	1.61

Futura Medium Oblique

6	4.22
8	3.6
10	2.87
12	2.43
14	2.11
16	1.76
18	1.61

Futura Medium Cond.

8	4.82
10	3.72
12	3.11
14 #1	2.77
14 #2	2.48
18	1.9

Garamond with Italic

6	3.93
8	3.37
9	3.18
10	2.95
11	2.7
12	2.59
14	2.3
18	1.77
24	1.38

Garamond Bold with Italic

6	3.75
8	3.19
10	2.75
12	2.42
14	2.17
18	1.61
24	1.21

Gothic No. 13

8	4.07
8	3.36
10	2.93
12	2.46
14	2.12
18	1.91
24	1.53
24	1.61

Gothic No. 16

8	2.6
10	2.14
12	1.97
14	1.63
18	1.46
24	1.13

Gothic Cond. No. 2

6	4.7
8	4.4
10	3.95
12	3.59
14	3.
18	2.47
24	2.02

Gothic Wide

6	2.89
8	2.31
10	1.92
12	1.63
14	1.43

Goudy Old Style with Italic

8	4.01
8	3.36
10	2.74
12	2.42
14	2.01

Goudy Bold with Italic

6	3.69
8	3.03
10	2.48
12	2.16
14	1.78
18	1.47
24	1.13

Greeting Monotone

10	3.11
12	2.57
14	2.26
18	1.72

Ideal News with Italic

5½	3.65
6	3.26
6½	3.06
6¾	3.06
7	2.92
7½	2.9
8	2.86
8½	2.72
9	2.65
10	2.41
11	2.17
12	1.98
14	1.73

Kenntonian with Italic

6	4.2
8	3.28
10	2.87
12	2.46
14	2.14
18	1.91
24	1.23

Korinna with Bold

6	3.8
8	2.96
9	2.74
10	2.46
12	2.08
14	1.78
18	1.46

Lorimer with Italic

6	3.59
8	2.97
9	2.69
10	2.58
12	2.19

Medieval with Italic

6	4.08
8	3.14
9	2.83
10	2.59
12	2.19
14	1.91
18	1.56
24	1.18

Medieval Bold

6	3.99
8	3.18
9	2.83
10	2.54
12	2.14
14	1.89
18	1.54
24	1.16

No. 16

6	3.26
7	2.93
8	2.69
9	2.46
10	2.31
12	1.96

Old Style No. 1

6	3.67
7	3.29
8	3.05
9	2.83
10	2.63
11	2.51
12	2.23
18	1.77

Old Style No. 7

8	3.32
9	3.04
10	2.82

Old Style No. 9

8	3.19
9	2.9
10	2.61

Palisade

18	2.28
24	1.72

Parisian

12	3.05
14	2.59
18	2.05

Park Avenue

12	2.94
14	2.64
18	2.03

Regal No. 1 with Italic

5	4.07
6	3.26
7	2.97
8	2.85
9	2.64
10	2.43
12	1.99
14	1.7

Regal No. 2 with Italic

5½	3.65
6	3.11
7	2.9
8	2.73

Rex with Italic

5	3.88
6	3.45
7	3.32
7½	3.
8	3.
10	2.53
12	2.13
14	1.85

Rivoli

12	3.05
14	2.59
18	2.05

Rugged Black

10	2.1
11	1.74
14	1.53
18	1.38
24	1.07

Scotch with Italic

8	3.12
10	2.75
11	2.6
12	2.21
14	1.86

Typo Roman Light

10	3.45
12	2.94
14	2.5
16	2.12

Vogue

6	3.8
8	3.51
10	2.93
12	2.44
14	2.12
18	1.67
24	1.28

Vogue Oblique

18	1.67
24	1.28

Vogue Bold Cond.

8	4.33
10	3.67
12	3.02
14	2.48
18	2.26
24	1.76

Vogue Bold

6	3.98
8	3.56
10	2.88
12	2.38
14	2.08
18	1.61
24	1.23

Vogue Bold Oblique

6	3.97
8	3.52
10	2.84
12	2.37
14	2.06
18	1.6
24	1.26

Vogue Extra Bold

6	3.71
8	3.08
10	2.5
12	2.03
14	1.79
18	1.48
24	1.12

Vogue Extra Bold Oblique

6	3.71
8	3.05
10	2.48
12	2.03
14	1.79
18	1.47
24	1.11

Vogue Extra Bold Cond.

8	4.33
10	3.64
12	3.00
14	2.63
18	2.11
24	1.68

Vogue Medium Condensed

18	2.08
24	1.62

Vogue Oblique

6	4.01
8	3.63
10	2.88
12	2.38
14	2.08

Waverley with Italic

8	3.11
9	2.73
10	2.56
11	2.34
12	2.13
14	1.80

Weiss Roman

8	3.88
9	3.45
10	3.25
11	2.87
12	2.63
14	2.32
16	1.92
18	1.53

Linotype

Antique No. 1

6	3.51
8	2.8
9	2.59
10	2.43
12	2.08
14	1.8
18	1.51
24	1.12

Baskerville

6	3.8
7	3.6
8	3.22
9	2.96
10	2.64
11	2.46
12	2.3
14	2.01
16	1.71

Baskerville Bold

7	3.6
8	3.22
9	2.96
10	2.64
11	2.46
12	2.29
14	2.05

Bell Gothic

6	4.56
7	3.89
8	3.5

Benedictine

6	4.08
7	3.56
8	3.12
9	2.82
10	2.52
11	2.31
12	2.12
14	1.85
18	1.53
24	1.15

Benedictine Book

6	4.08
7	3.56
8	3.12
9	2.82
10	2.52
11	2.31
12	2.12
14	1.84
18	1.52
24	1.16

Benedictine Bold

8	2.94
10	2.33
12	1.93
14	1.66
18	1.39
24	1.05

Bookman

6	3.71
7	3.4
8	3.11
9	2.88
10	2.6
11	2.375
12	2.21
14	1.84

Bodoni

6	4.18
7	3.56
8	3.13
10	2.59
12	2.36
14	2.09
16	1.88
18	1.63
21	1.45
24	1.28

Bodoni Book

6	4.21
7	3.71
8	3.31
9	2.98
10	2.76
12	2.5
14	2.25
18	1.83
24	1.47

Bodoni Bold

6	3.7
7	3.36
8	2.89
10	2.44
12	2.17
14	1.95
18	1.53
21	1.37
24	1.22

Bodoni Bold Cond.

18	1.93
24	1.52

Poster Bodoni

8	2.34
10	2.
12	1.69
14	1.46
18	1.13
24	.84

Caledonia

6	3.72
8	3.12
9	2.87
10	2.63
11	2.44
12	2.26
14	2.00

Caledonia Bold

16	1.72
18	1.49
21	1.33
24	1.19

Card Italic

10	2.80
12	2.51
14	2.10
18	1.58

Caslon

7	3.62
8	3.17
9	2.99
10	2.83
11	2.43
12	2.19
14	1.89
18	1.52

Caslon Italic

18	1.45
24	1.11

Caslon Old Face

6	4.39
8	3.62
9	3.19
10	3.05
11	2.8
11½	2.58
12	2.4
14	2.13
18	1.86
21	1.5
24	1.31

Caslon No. 2

6	4.16
8	3.35
10	2.7
11	2.46
12	2.27

Caslon No. 137

7	3.8
8	3.33
9	2.97
10	2.66
11	2.43
12	2.21

Caslon No. 3

5	4.5
6	3.83
7	3.45
8	3.17
9	2.75
10	2.65
12	2.08
14	1.77
18	1.27
24	.96

Caslon Bold

5	3.8
6	3.42

Caslon Bold Cond.

14	2.03
18	1.69
24	1.37

Century Expanded

4	4.4
6	3.6
7	3.19
8	2.87
9	2.66
10	2.41
11	2.3
12	2.11
14	1.76
18	1.5
24	1.13

Century Bold

6	3.6
7	3.11
8	2.97
9	2.57
10	2.36
11	2.25
12	2.03
14	1.71
18	1.53
24	1.12

Century Bold Condensed

18	1.94
24	1.53

Cheltenham

8	3.56
9	3.2
10	2.99
11	2.72
12	2.53
14	2.15
20	1.75
24	1.42

Cheltenham Cond.

8	3.56
10	2.94
12	2.57
14	2.2
18	1.97
24	1.55

Cheltenham Wide

6	3.39
8	2.98
10	2.52
12	2.21
14	1.8

Cheltenham Bold

6	3.39
8	2.85
10	2.28
11	2.28
12	2.08
14	1.72
18	1.49
24	1.15

Cheltenham Med. Cond.

18	1.96
24	1.5

Cheltenham Bold Cond.

6	4.43
8	3.6
10	2.9
12	2.54
14	2.19
18	1.8
24	1.45

Chelt. Bold Ex. Cond.

18	2.22
24	1.79

Classic

6	3.93
8	2.97
10	2.59
12	2.16
14	1.79

Cloister

6	4.27
8	3.56
10	3.11
11	2.97
12	2.75
14	2.45
18	1.93
24	1.46

Cloister Wide

6	3.8
8	3.13
10	2.71
12	2.48
14	2.18

Cloister Bold

6	3.8
8	3.13
10	2.71
12	2.48
14	2.18
18	1.73
24	1.34

Corona

7½	2.9
8	2.9
8½	2.82
10	2.48

Corona Italic

7½	2.9
8½	2.82

DeVinne

6	3.68
8	3.13
9	2.93
10	2.61
11	2.3
12	2.1
14	1.81

Electra

7	3.68
8	3.3
9	2.92
10	2.76
11	2.53
12	2.41
14	2.14

Electra Bold

8	3.30
9	2.92
10	2.76
11	2.53
12	2.41
14	2.14

Electra Cursive

8	3.29
9	2.92
10	2.71
11	2.51
12	2.41

Elzevir

8	2.97
10	2.55
12	2.23
14	1.81

Elzevir No. 3

6	3.98
8	3.09
9	2.85
10	2.66
11	2.44
12	2.23
14	1.93
18	1.53
24	1.15

Erbar Light Cond.

8	4.19
10	3.61
12	3.3
14	2.8
18	2.25
24	1.81

Erbar Medium Cond.

18	2.21
24	1.79

Left-hand column lists point sizes. Right-hand column lists lower case characters per pica.

Linotype, continued

Erbar Bold Cond.

8	4.19
10	3.61
12	3.3
14	2.8
18	2.11
24	1.7

Estienne

8	3.45
10	3.01
12	2.72
14	2.39
16	2.18
18	2.03

Excelsior

5	3.6
5½	3.41
6	3.2
7	2.9
7½	2.78
7¾	2.64
8	2.72
9	2.57
10	2.41
11	2.97
12	2.17
14	2.

Fairfield

6	3.76
8	3.22
9	3.00
10	2.8
11	2.6
12	2.46
14	2.19

Franklin Gothic

18	1.23
24	1.

Garamond

6	4.29
8	3.51
9	3.13
10	2.85
11	2.53
12	2.3
14	2.06
18	1.76
24	1.21

Garamond Bold

6	3.83
8	3.17
10	2.53
12	2.02
14	1.83
18	1.51
24	1.08

Garamond Bold No. 3

6	3.64
7	3.29
8	3.03
9	2.78
10	2.63
11	2.44
12	2.31
14	2.05
18	1.6
24	1.92

Garamond No. 3

6	3.94
7	3.6
8	3.32
9	3.08
10	2.87
11	2.73
12	2.57
14	2.28
18	1.73

Gothic 13

8	3.35
10	2.92
12	2.46
14	2.12
18	1.81
24	1.46

Gothic 16

8	2.57
10	2.12
12	1.97
14	1.63
18	1.48
24	1.14

Gothic No. 18

12	2.69
14	2.17
18	1.96
24	1.58

Gothic 38

10	2.25
12	1.96
14	1.54
18	1.31
24	1.06

Gothic Cond. No. 1

8	3.45
10	2.80
11	2.53
12	2.30
14	2.06
18	2.02

Gothic Cond. No. 2

6	4.68
8	4.44
10	3.93
12	3.57
14	2.90
18	2.44
24	2.02

Granjon

6	4.29
8	3.48
9	3.14
10	2.94
11	2.72
12	2.5
14	2.23
18	1.9
21	1.74
24	1.31

Granjon Bold

6	4.22
8	3.5
9	3.16
10	2.97
11	2.73
12	2.51
14	2.25

Ionic No. 5

5	4.08
5½	3.63
6	3.29
6½	3.11
6¾	3.2
7	2.99
7½	2.83
8	2.7
9	2.46
10	2.34
12	2.1

Janson

8	3.09
9	2.81
10	2.61
11	2.46
12	2.31
14	2.08

Jenson

8	3.05
10	2.63
12	2.21
14	1.9

Jenson Condensed

18	1.78

Lino Text

8	3.64
10	3.03
12	2.63
14	2.43
18	2.16

Memphis Light

8	3.53
8	3.29
9	2.85
10	2.55
12	2.06
14	1.75
18	1.51
24	1.11

Memphis Bold

6	3.51
8	3.28
9	2.85
10	2.57
12	2.07
14	1.76
18	1.52
24	1.08

Memphis Bold Condensed

10	3.00
12	2.53
14	2.2
18	1.88
24	1.44

Memphis Extra Bold

8	2.43
10	2.07
12	1.7
14	1.49
18	1.3
24	.93

Memphis Extra Bold Condensed

8	3.56
10	3.00
12	2.53
14	2.2
18	1.88
24	1.44

Memphis Medium

6	3.51
8	3.28
9	2.83
10	2.54
12	2.07
14	1.74
18	1.49
24	1.07

Memphis Med. Cond.

8	3.56
10	3.00
12	2.53
14	2.2
18	1.9
24	1.45

Metro Medium

6	3.98
8	3.55
10	2.85
12	2.37
14	2.06
18	1.59
24	1.27

Metroblack No. 2

6	3.61
8	3.19
10	2.53
12	2.1
14	1.8
18	1.42
24	1.09

Metrolite No. 2

6	3.61
8	3.19
10	2.53
12	2.1
14	1.8
18	1.42
24	1.09

Narciss

10	2.43
12	2.02
14	1.87
18	1.62
21	1.31
24	1.13

No. 1

5½	3.83
6	3.39
7	3.2
8	2.97
9	2.7
10	2.54
11	2.37
12	2.11
12	2.14

No. 2

6	3.17
7	2.95
8	2.9
10	2.41
12	2.01

No. 16

6	3.26
7	2.93
8	2.66
9	2.46
10	2.3
12	1.95
14	1.67

No. 21

6	3.8
7	3.22
7B	3.22
8	3.1
9	2.96
10	2.62
11	2.41
12	2.2

Old Style No. 1

5	4.11
6	3.75
7	3.39
8	3.13
9	2.9
10	2.7
11	2.53
12	2.28
14	1.92
18	1.75

Old Style No. 3

6	3.8
8	3.36
10	2.86
12	2.4

Old Style No. 7

6	4.01
7	3.6
8	3.29
9	3.06
10	2.8
10½	2.64
11	2.53
12	2.35
14	2.
18	1.55
24	1.13

Opticon

5½	3.35
6	3.14
7	2.88
7½	2.74
8	2.63
9	2.55
10	2.375
11	2.23
12	2.14

Original Old Style

8	3.83
8	3.1
10	2.75
12	2.37
14	1.99

Pabst Ex. Bd.

10	2.01
12	1.68
14	1.46
18	1.16
24	.87

Pabst Extra Bold Cond.

10	2.37
12	1.99
14	1.69
18	1.56
24	1.2

Pabst Old Style

10	2.67
12	2.26
14	1.89
18	1.59

Paragon

5½	3.39
6	3.19
7	2.87
7½	2.76
8	2.66
9	2.52
10	2.34

Poster Bodoni Compressed

18	2.27
24	1.75

Ryerson Cond.

18	1.89
24	1.60

Scotch

6	3.51
8	3.1
10	2.73
11	2.53
11½	2.4
12	2.19
14	1.83
18	1.46
24	1.12

Scotch No. 2

8	3.31
9	2.96
10	2.61
11	2.44
12	2.21

Spartan Black

6	3.35
8	3.08
10	2.39
12	1.98
14	1.74
18	1.4
24	1.08

Spartan Black Cond.

10	2.9
12	2.61
14	2.43
18	1.92
24	1.54

Spartan Heavy

6	3.8
8	3.5
10	2.8
12	2.27
14	2.02
18	1.54
24	1.24

Spartan Light

6	3.84
8	3.68
10	2.92
12	2.48
14	2.17

Spartan Medium

6	3.8
8	3.68
10	2.92
12	2.48
14	2.17
18	1.55
24	1.25

Spartan Medium Condensed

14	2.44
18	1.93
24	1.57

Textype

6	3.35
7	3.1
8	2.98
9	2.73
10	2.52
11	2.32
12	2.23
14	2.05
18	1.58

Textype Bold

6	3.32
7	3.09
8	2.92
9	2.68
10	2.48
11	2.3

Vulcan Bld.

10	2.08
12	1.89
14	1.63
18	1.25
21	1.09
24	.94

Linotype—A-P-L

Bodoni

18	1.66
24	1.28

Bodoni Italic

18	1.7
24	1.33

Bold Bodoni

18	1.53
24	1.2

Bodoni Bold Italic

18	1.56
24	1.23

Caslon Bold Condensed

18	1.66
24	1.33

Caslon Old Face

18	1.83
24	1.28

Caslon Old Face Italic

18	2.02
24	1.58

Caslon No. 3

6	3.8
8	3.13
10	2.45
12	2.08
14	1.77
18	1.28
24	.96

Caslon No. 3 Italic

6	3.8
8	3.13
10	2.43
12	2.08
14	1.77
18	1.25
24	.98

Century Bold

18	1.52
24	1.09

Century Bold Italic

18	1.36
24	1.11

Cheltenham Bold

8	2.9
10	2.31
12	2.13
14	1.73
18	1.47
24	1.12

Cheltenham Bold Italic

18	1.43
24	1.13

Cheltenham Bold Cond.

18	1.77
24	1.4

Cheltenham Bold Cond. Italic

18	1.79
24	1.41

Cloister

18	1.89
24	1.42

Cloister Italic

18	2.15
24	1.72

Cloister Bold

18	1.7
24	1.3

Cloister Bold Italic

18	1.89
24	1.46

Erbar Bold Cond.

18	2.14
24	1.7

Erbar Light Cond.

18	2.23
24	1.8

Franklin Gothic

18	1.23
24	1.04

Franklin Gothic Ital.

18	1.26
24	1.03

Franklin Gothic Extra Cond.

18	1.9
24	1.57

Garamond No. 3

18	1.75
24	1.31

Garamond Bold No. 3

18	1.59
24	1.21

Garamond Bold No. 3 Italic

18	1.78
24	1.35

Cothic Cond. No. 2

6	4.7
8	4.4
10	3.88
12	3.51
14	2.9

Gothic No. 13

8	3.35
10	2.95
12	2.42
14	2.1
18	1.89
24	1.52

Granjon

18	1.73
24	1.3

Granjon Italic

18	1.88
24	1.53

Memphis Light

6	3.51
8	3.25
10	2.54
12	2.07
14	1.76
18	1.51
24	1.08

Memphis Bold

6	3.51
8	3.29
10	2.53
12	2.07
14	1.76
18	1.49
24	1.03

Memphis Extra Bold

18	1.29
24	.93

Memphis Medium

18	1.49
24	1.07

Memphis Medium Italic

18	1.52
24	1.07

Memphis Medium Condensed

18	1.91
24	1.46

Metroblack No. 2

6	3.56
8	3.13
10	2.5
12	2.1
14	1.79
18	1.41
24	1.08

Metrolite No. 2

6	3.6
8	3.1
10	2.5
12	2.1
14	1.79
18	1.41
24	1.08

Metro-medium No. 2

6	3.91
8	3.51
10	2.8
12	2.37
14	2.03
18	1.59
24	1.23

Metrothin No. 2

6	3.99
8	3.51
10	2.8
12	2.37
14	2.02
18	1.59
24	1.26

Narciss

18	1.6
24	1.09

Pabst Extra Bold

18	1.13
24	8.5

Pabst Extra Bold Italic

18	1.1
24	.85

Pabst Extra Bold Cond.

18	1.53
24	1.16

Poster Bodoni

18	1.12
24	.82

Poster Bodoni Compressed

18	2.25
24	1.73

Poster Bodoni Italic

18	1.17
24	.87

Left-hand column lists point sizes. Right-hand column lists lower-case characters per pica.

Ludlow

Artcraft

10	2.45
12	2.12
14	1.88
18	1.44
24	1.14

Artcraft Italic

10	2.56
12	2.15
14	1.81
18	1.5
24	1.17

Artcraft Bold

8	3.5
8	2.96
10	2.45
12	2.05
14	1.79
18	1.37
24	1.09

Bodoni Bold

6	4.44
8	3.52
10	2.78
12	2.46
14	2.05
18	1.62
24	1.18

Bodoni Bold Italic

6	4.17
8	3.42
10	2.66
12	2.33
14	1.96
18	1.53
24	1.1

Bodoni Black

6	2.97
8	2.34
10	2.05
12	1.86
14	1.6
18	1.21
24	.89

Bodoni Black Italic

12	1.69
14	1.45
18	1.12
24	.84

Bodoni Light

12	2.75
14	2.31
18	1.75
24	1.28

Bodoni Light Italic

12	2.63
14	2.23
18	1.74
24	1.28

Bodoni Campanile

14	2.97
18	2.31
24	1.72

Bodoni Campanile Italic

24	1.64

Bodoni Modern

6	4.06
8	3.39
10	2.7
12	2.42
14	2.11
18	1.66
24	1.23

Bodoni Modern Italic

6	4.31
8	3.59
10	2.93
12	2.44
14	2.27
18	1.82
24	1.37

Bookman

12	1.97
14	1.66
18	1.24
24	.99

Bookman Italic

12	1.78
14	1.48
18	1.23
24	.99

Cameo

12	1.77
14	1.5
18	1.25
24	.98

Cameo Italic

12	1.58
14	1.34
18	1.15
24	.92

Caslon Light

6	3.29
8	2.83
10	2.48
12	2.17
14	1.82
18	1.36
24	1.06

Caslon Light Italic

6	4.17
8	2.87
10	2.51
12	2.23
14	1.77
18	1.40
24	1.05

Caslon Bold

6	3.26
8	2.77
10	2.45
12	2.02
14	1.71
18	1.31
24	1.02

Caslon Bold Italic

6	3.45
8	2.86
10	2.32
12	1.92
14	1.62
18	1.21
24	.92

Caslon Bold Con.

6	3.94
8	3.26
10	2.72
12	2.38
14	2.1
18	1.63
24	1.21

Caslon Bold Extra Condensed

12	3.13
14	2.64
18	2.06
24	1.61

Caslon Oldface Heavy

6	3.32
8	3.11
10	2.51
12	2.11
14	1.71
18	1.35
24	1.05

Caslon Heavy Ital.

14	1.45
18	1.17
24	.9

Caslon True-Cut

8	3.67
10	3.1
12	2.38
14	2.11
18	1.46
22	1.62
24	1.27

Caslon Italic True-Cut

8	3.76
10	3.22
12	2.56
14	2.32
18	1.95
22	1.64
24	1.39

Century Expanded

12	2.31
14	1.87
18	1.47
24	1.09

Century Bold

12	2.25
14	1.9
18	1.47
24	1.11

Century Bold Italic

12	2.17
14	1.82
18	1.43
24	1.08

Century Bold Extended

12	1.62
14	1.33
18	1.1
24	.86

Cheltenham Bold

6	3.6
8	3.05
10	2.42
12	2.21
14	1.93
18	1.46
24	1.12

Cheltenham Bold Italic

6	3.18
8	2.84
10	2.26
12	2.18
14	1.84
18	1.44
24	1.07

Cheltenham Bold Condensed

6	4.27
8	3.76
10	2.97
12	2.83
14	2.41
18	1.92
24	1.45

Cheltenham Bold Cond. Italic

12	2.6
14	2.21
18	1.73
24	1.34

Cheltenham Bold Extra Condensed

12	3.13
14	2.55
18	2.13
24	1.6

Cheltenham Bold Extended

12	1.76
14	1.45
18	1.11
24	.83

Cheltenham Bold Outline

18	1.47
24	1.11

Cheltenham Oldstyle

12	2.8
14	2.35
18	1.76
24	1.4

Cheltenham Oldstyle Italic

12	2.55
14	2.2
18	1.76
24	1.32

Cheltenham Oldstyle Condensed

12	2.82
14	2.45
18	1.88
24	1.51

Cheltenham Oldstyle Cursive

18	1.75
24	1.30

Cheltenham Wide

6	3.71
8	3.23
10	2.56
12	2.44
14	2.
18	1.51
24	1.16

Clearface Bold

18	1.56
24	1.21

Clearface Bold Italic

14	1.83
18	1.46
24	1.15

Coronet

14	3.72
18	2.85
24	2.04

Coronet Bold

14	3.22
18	2.46
24	1.86

Cushing Antique

12	2.41
14	1.96
18	1.49
24	1.14

Eden Light

8	4.26
10	3.29
12	2.69
14	2.43
18	1.92
24	1.45

Eden Bold

10	3.04
12	2.56
14	2.15
18	1.69
24	1.29

Eusebius Light

6	4.50
8	4.07
10	3.20
12	2.73
14	2.43
16	2.15
18	1.85
24	1.36

Eusebius Light Italic

8	4.44
10	3.64
12	3.29
14	2.85
16	2.53
18	2.23
24	1.68

Eusebius Bold

6	4.26
8	3.56
10	2.81
12	2.51
14	2.18
18	1.72
24	1.32

Eusebius Bold Italic

8	3.88
10	3.22
12	2.88
14	2.68
18	1.82
24	1.46

Eusebius Open

18	1.52
24	1.16

Franklin Gothic

6	3.17
8	2.65
10	2.06
12	1.85
14	1.53
18	1.26
24	.97

Franklin Gothic Extra Cond.

12	2.65
14	2.28
18	1.85
24	1.47

Garamond

8	3.82
10	3.14
12	2.66
14	2.41
16	2.07
18	1.89
24	1.44

Garamond Italic

8	4.42
10	3.66
12	3.17
14	2.87
16	2.49
18	2.26
24	1.73

Garamond Bold

8	3.32
10	2.61
12	2.51
14	2.21
18	1.67
24	1.28

Garamond Bold Italic

8	3.76
10	2.97
12	2.8
14	2.49
18	1.88
24	1.45

Gothic Cond.

6	4.68
8	4.07
10	4.12
12	3.67
14	3.03
18	2.31
24	1.83

Gothic Med. Cond.

6	4.07
8	3.6
10	3.17
12	2.77
14	2.26
18	1.78
24	1.34

Gothic Record

6	3.72
8	3.08
10	2.59
12	2.18

Gothic Square

4	5.04
6	3.26
8	2.84
10	2.34
12	2.08
14	1.66
18	1.3
24	.97

Gothic Square Heavy

6	3.16
8	2.65
10	2.06
12	1.86
14	1.53
18	1.27
24	.98

Hauser Script

24	1.64

Karnak Black

10	1.99
12	1.8
14	1.5
18	1.15
24	.94

Karnak Black Cond.

14	2.27
18	1.76
24	1.35

Karnak Black Condensed Italic

14	2.11
18	1.64
24	1.27

Karnak Black Italic

14	1.43
18	1.05
24	.87

Karnak Intermediate

6	3.89
8	3.04
10	2.37
12	2.08
14	1.73
18	1.33
24	.98

Karnak Light

6	4.02
8	3.23
10	2.51
12	2.12
14	1.8
18	1.41
24	1.04

Karnak Medium

6	3.72
8	3.09
10	2.39
12	2.
14	1.67
18	1.29
24	.98

Karnak Obelisk

14	3.36
18	2.64
24	1.99

Lafayette Extra Cond.

18	2.99
24	2.25

Laureate

18	1.46
24	1.07

Ludlow Black

8	2.33
10	1.73
12	1.64
14	1.36
18	1.1
24	.85

Ludlow Black Italic

12	1.58
14	1.29
18	1.05
24	.81

Mandate

Allow for Swashes

18	1.77
24	1.3

Mayfair Cursive

Allow for Swashes

14	2.68
18	2.17
24	1.57

No. 11-B

6	3.47
8	2.82
10	2.42
12	2.15
14	1.74
18	1.41
24	1.12

No. 11-BI

6	3.89
10	2.51
12	2.19
8	2.96
14	1.81
18	1.49
24	1.17

No. 11-L

6	3.83
8	3.09
10	2.57
12	2.3
14	1.93
18	1.54
24	1.22

No. 11-LI

6	4.27
8	3.39
10	2.88
12	2.55
14	2.13
18	1.73
24	1.37

Old English

8	3.03
10	2.66
12	2.33
14	2.01
18	1.62
24	1.23

Powell

14	1.65
18	1.45
24	1.02

Radiant Bold

10	2.46
12	2.10
14	1.81
18	1.43
24	1.09

Radiant Bold Condensed

12	2.85
14	2.51
18	1.98
24	1.60

Radiant Bold Extra Condensed

14	3.32
18	2.7
24	2.07

Radiant Heavy

10	2.28
12	1.99
14	1.73
18	1.33
24	1.02

Radiant Medium

6	4.56
8	3.57
10	2.83
12	2.42
14	2.07
18	1.62
24	1.24

Samson

24	97

Stellar

8	4.22
10	3.41
12	3.37
14	2.93
18	2.17
24	1.65

Stellar Bold

8	3.91
10	3.31
12	2.99
14	2.55
18	1.91
24	1.42

Stygian Black

14	1.61
18	1.19
24	1.06

Stygian Black Italic

14	1.66
18	1.22
24	1.12

Tempo Black

18	1.21
24	.89

Tempo Bold

6	4.02
8	3.34
10	2.61
12	2.31
14	1.95
18	1.47
24	1.07

Tempo Bold Italic

12	2.44
14	2.07
18	1.61
24	1.18

Tempo Bold Condensed

6	5.34
8	4.12
10	3.38
12	2.94
14	2.52
18	1.95
24	1.45

Tempo Heavy

6	3.6
8	2.81
10	2.43
12	2.01
14	1.79
18	1.31
24	.99

Tempo Heavy Italic

12	2.07
14	1.76
18	1.36
24	1.02

Tempo Heavy Condensed

10	3.11
12	2.80
14	2.39
18	1.98
24	1.48

Tempo Heavy Condensed Italic

14	2.34
18	1.93
24	1.45

Tempo Light

6	4.73
8	3.79
10	3.29
12	2.75
14	2.33
18	1.76
24	1.29

Tempo Light Italic

10	3.1
12	2.66
14	2.25
18	1.73
24	1.28

Tempo Medium

6	4.47
8	3.56
10	3.04
12	2.75
14	2.24
18	1.72
24	1.29

Tempo Medium Italic

8	3.93
10	3.02
12	2.6
14	2.24
18	1.75
24	1.23

Ultra-Modern (McMurtrie)

12	2.12
14	1.93
18	1.45
24	1.17

Ultra-Modern Italic (McMurtrie)

12	2.3
14	2.14
18	1.59
24	1.19

Ultra-Modern Bold

14	1.81
18	1.33
24	.99

Underwood Bold

10	2.17
12	1.81

Left-hand column lists point sizes. Right-hand column lists lower-case characters per pica.

Adtype No. 163

6	3.4
8	2.79
10	2.38
12	1.98

Antique Modern No. 26

5	3.99
6	3.4
7	2.97
8	2.79
9	2.65
10	2.38
11	2.17
12	1.98

Antique Modern Condensed No. 76

5	5.76
6	3.85
7	3.37
8	3.24
9	3.00
10	2.69
12	2.25

Antique Bold Cond. No. 145

6	3.4
8	2.79
10	2.38
12	1.98

Atlantic No. 35

6	4.12
8	3.34
10	2.65
12	2.44

Atlantic Italic No. 35

6	4.48
8	3.64
10	2.9
12	2.42

Baskerville No. 353

6	4.08
7	3.66
8	3.25
9	3.06
10	2.76
11	2.5
12	2.3
14	2.11
18	1.76
24	1.29

Baskerville Bold No. 453

8	2.97
9	2.79
10	2.52
11	2.29
12	2.1

Baskerville Italic No. 353

6	4.78
7	4.3
8	3.79
9	3.58
10	3.22
11	2.93
12	2.69
14	2.46
18	2.05
24	1.49

Bell No. 402

8	3.33
9	2.99
10	2.83
11	2.58
12	2.36

Bell Italic No. 402

8	3.61
9	3.22
10	3.07
11	2.79
12	2.55

Binny Old Style No. 21

4½	4.83
5	4.11
5½	4.11
6	3.82
7	3.33
8	3.13
9	2.96
10	2.6
11	2.36
12	2.22

Binny Old Style Italic No. 21

4½	5.27
5	4.46
5½	4.46
6	4.15
7	3.63
8	3.41
9	3.22
10	2.83
11	2.58
12	2.43

Bodoni No. 175

5	4.44
6	3.83
7	3.33
8	3.15
9	2.96
10	2.66
11	2.41
12	2.23
14	1.89
18	1.46
24	1.10

Bodoni Italic No. 175

5	4.83
6	4.25
7	3.63
8	3.44
9	3.22
10	2.91
11	2.64
12	2.43
14	2.07
18	1.57
24	1.2

Bodoni No. 375

6	3.95
7	3.55
8	3.15
9	2.96
10	2.66
11	2.42
12	2.23
14	2.11
18	1.64
24	1.28

Bodoni Italic No. 375

6	3.95
7	3.88
8	3.15
9	3.22
10	2.71
11	2.64
12	2.33
14	2.14
18	1.7

Bodoni Bold No. 275

6	3.43
8	2.82
10	2.41
12	2.

Bodoni Bold Italic No. 275

6	4.3
7	3.78
8	3.33
9	3.15
10	2.85
11	2.7
12	2.58

Bodoni Book No. 875

6	4.59
7	3.93
8	3.55
9	3.33
10	2.99
11	2.85
12	2.71

Bodoni Book Italic No. 875

6	4.59
7	3.93
8	3.55
9	3.33
10	2.99
11	2.85
12	2.71

Recut Bodoni Bold No. 975

6	3.69
7	3.33
8	2.94
9	2.76
10	2.49
11	2.26
12	2.17

Recut Bodoni Bold Italic No. 975

6	3.65
7	3.28
8	2.88
9	2.71
10	2.45
11	2.23
12	2.13

Bodoni Bold No. 275

7	2.97
9	2.65
11	2.23
14	1.7
18	1.27

Bodoni Bold Italic No. 275

7	2.97
9	2.65
11	2.23
14	1.77
18	1.44

Bookman Old Style No. 98

6	3.68
7	3.33
8	3.15
9	2.98
10	2.61
11	2.44
12	2.23
14	1.87
18	1.42
24	.95

Bookman Old Style Italic No. 98

6	3.43
7	2.97
8	2.82
9	2.68
10	2.41
11	2.23
12	2.

Bruce Old Style No. 20

6	4.11
7	3.66
8	3.32
9	3.04
10	2.79
11	2.43
12	2.23

Bruce Old Style Italic No. 20

6	4.47
7	4.0
8	3.64
9	3.31
10	3.06
11	2.69
12	2.64

Caslon Old Style No. 137

6	4.11
8	3.32
9	3.04
10	2.65
11	2.41
12	2.23

Caslon Old Style Italic No. 137

6	4.47
8	3.65
9	3.23
10	2.91
11	2.66
12	2.43

Caslon Old Style No. 37

6	4.12
7	3.66
8	3.34
9	2.95
10	2.67
11	2.43
12	2.23
14	1.9
18	1.51
24	1.11

Caslon Old Style Italic No. 37

6	4.47
7	4.00
8	3.65
9	3.23
10	2.91
11	2.66
12	2.43
14	1.95
18	1.58
24	1.13

Caslon Bold No. 79

5	3.69
6	3.43
7	3.
8	2.82
9	2.68
10	2.35
11	2.19
12	2.
14	1.59
18	1.27
24	.98

Caslon Bold Italic No. 79

6	3.43
7	2.98
8	2.82
9	2.66
10	2.35
12	2.

Caslon American No. 637

8	3.78
10	3.15
11	2.69
12	2.36
14	2.11
18	1.7

Caslon Italic American No. 637

8	4.22
10	3.56
11	3.00
12	2.64
14	2.36
18	1.93

Caslon Condensed No. 113

5	5.4
6	4.5
8	3.38
10	2.85
12	2.45

Caslon New No. 537

6	3.78
8	3.15
9	2.69
10	2.36
12	2.11
14	1.75
18	1.36
24	1.04

New Caslon Italic No. 537

6	4.22
8	3.56
9	3.0
10	2.64
12	2.36

Caslon Old Roman No. 78

6	3.84
8	3.1
10	2.57
12	2.25

Caslon Old Roman Italic No. 78

6	3.84
8	3.1
10	2.57
12	2.25

Century Schoolbook No. 420

6	3.66
8	2.89
9	2.66
10	2.48
11	2.27
12	2.13
14	1.79
16	1.58
18	1.25

Century Schoolbook Italic No. 420

6	3.98
8	3.14
9	2.9
10	2.7
11	2.47
12	2.32
14	1.76
16	1.61
18	1.46

Century Old Style No. 157

6	3.83
7	3.35
8	3.15
9	2.82
10	2.56
11	2.44
12	2.23
14	1.86
18	1.47
24	1.17

Century Old Style Italic No. 157

6	4.26
7	3.66
8	3.44
9	3.07
10	2.78
11	2.66
12	2.43
14	1.95
18	1.56
24	1.21

Century Expanded No. 20

6	3.83
7	3.35
8	3.07
9	2.76
10	2.56
11	2.44
12	2.23
14	1.79
18	1.41
24	1.09

Century Expanded Italic No. 20

6	4.26
7	3.66
8	3.32
9	2.99
10	2.78
11	2.66
12	2.43
14	1.84
18	1.47
24	1.12

Century Bold No. 118

5½	4.27
6	3.86
7	3.4
8	3.19
9	3.01
10	2.7
11	2.47
12	2.26
14	1.76
18	1.41
24	1.1

Century Bold Italic No. 118

6	3.43
8	2.82
10	2.41
12	2.
14	1.7
18	1.32

Century Schoolbook Bold No. 620

6	3.22
8	2.51
10	2.17
12	1.86
14	1.55
16	1.42

Cheltenham Bold No. 86

5	4.
6	3.43
7	3.
8	2.82
9	2.68
10	2.35
11	2.19
12	2.
14	1.8
18	1.46
24	1.12

Cheltenham Bold Italic No. 86

5	4.
6	3.43
7	2.98
8	2.82
9	2.66
10	2.35
11	2.17
12	2.
14	1.76
18	1.4
24	1.1

Cheltenham Bold Cond. No. 88

5	5.4
6	4.69
8	3.85
10	3.18
12	2.71
14	2.21
18	1.81
24	1.45

Cheltenham Bold Cond. Italic No. 88

6	4.69
8	3.85
10	3.18
12	2.71

Cheltenham Bold Extra Condensed No. 141

6	5.38
8	4.5
10	3.84
12	3.38

Cheltenham Bold Ext'd No. 287

6	2.79
8	2.32
10	1.91

Cheltenham Bold Outline No. 12

8	2.79
10	2.32
12	1.99

Cheltenham Medium No. 186

5	4.52
6	3.86
7	3.4
8	3.19
9	3.01
10	2.72
11	2.47
12	2.26
14	1.95
18	1.58
24	1.26

Cheltenham Medium Italic No. 186

9	3.00
10	2.7
11	2.45
12	2.26

Cheltenham Old Style No. 64

6	4.43
8	3.67
10	2.97
12	2.55
14	2.24
18	1.79
24	1.4

Cheltenham Old Style Italic No. 64

6	4.82
8	4.03
10	3.22
12	2.77
14	2.13
18	1.72
24	1.35

Cheltenham Old Style Condensed No. 264

8	4.11
10	3.32
12	2.79

Cheltenham Wide No. 164

6	3.83
7	3.35
8	3.15
10	2.67
12	2.23
14	1.92
18	1.56
24	1.21

Cheltenham Wide Italic No. 164

6	4.26
8	3.44
10	2.91
12	2.43

Clearface No. 89

6	3.86
8	3.18
10	2.7
12	2.26

Clearface Italic No. 89

6	3.86
8	3.18
10	2.7
12	2.26

Cloister Old Style No. 395

14	2.49
18	1.94
24	1.5

Cloister Bold No. 295

6	3.92
8	3.23
10	2.75
12	2.43
14	2.21
18	1.75
24	1.35

Cloister Bold Italic No. 295

6	4.27
8	3.52
10	2.98
12	2.65

Cochin Old Style No. 61

6	3.83
7	3.32
8	3.15
9	3.04
10	2.61
12	2.23
14	1.79
18	1.44
24	1.07

Cochin Old Style Italic No. 61

6	4.26
7	3.63
8	3.44
9	2.96
10	2.84
12	2.43
14	1.99
18	1.58
24	1.26

Cochin Bold No. 616

6	3.
8	2.82
10	2.35
12	2.
14	1.67
18	1.3
24	.98

Cochin Bold Italic No. 616

6	3.43
8	2.82
10	2.35
12	2.
14	1.67
18	1.3
24	.98

Cochin Open No. 262

18	1.27
24	1.07

Cooper No. 482

8	3.54
10	2.78
12	2.47
14	1.91
18	1.53
24	1.16

Cooper Black No. 282

6	2.97
8	2.62
10	2.05
12	1.77
14	1.43
18	1.1
24	.83

Cosmopolitan No. 4

6	3.82
8	3.14
10	2.65
12	2.44

Cosmopolitan Italic No. 4

6	4.16
8	3.42
10	2.9
12	2.42

Cushing No. 25

5	4.22
6	3.86
7	3.49
8	3.17
9	2.85
10	2.7
11	2.4
12	2.25

Cushing Italic No. 25

6	3.86
7	3.49
8	3.17
9	3.00
10	2.7
11	2.45
12	2.25

Deepdene No. 315

8	4.39
8	3.62
10	3.08
12	2.56
14	2.31
18	2.04
24	1.79
24	1.36

Deepdene Italic No. 315

6	5.25
8	4.34
10	3.69
12	3.07
14	2.82
18	2.54
18	2.21
24	1.69

Deepdene Bold No. 317

6	4.02
8	3.32
10	2.83
12	2.35
14	1.99
18	1.57
24	1.2

Deepdene Bold Italic No. 317

6	4.35
8	3.59
10	3.06
12	2.55
14	2.26
18	1.78
24	1.37

Della Robbia No. 231

6	4.44
8	3.32
10	2.79
12	2.23

De Vinne No. 11

5	3.97
6	3.43
8	2.82
10	2.43
11	2.23
12	1.98

De Vinne Italic No. 11

8	2.82
10	2.43
12	1.98

De Vinne Condensed No. 111

6	4.14
7	3.6
8	3.38
10	2.68
11	2.45
12	2.25

De Vinne Outline No. 42

8	2.82
10	2.43
12	1.98

Engravers Old English Bold No. 188

6	3.17
8	2.66
10	2.16
12	1.91

Engravers Roman No. 223

4½	3.4
6	2.66
8	1.99

Left-hand column lists point sizes. Right-hand column lists lower case characters per pica.

Monotype, continued

Farmers Old Style No. 15

6	3.8
7	3.33
8	3.14
9	2.97
10	2.66
11	2.43
12	2.22

Farmers Old Style Italic No. 15

6	4.22
7	3.64
8	3.42
9	3.23
10	2.9
11	2.66
12	2.43

Garamond American No. 648

6	4.0
7	3.61
8	3.29
9	3.01
10	2.85
11	2.72
12	2.54

Garamond American Italic No.648

6	4.62
7	4.08
8	3.72
9	3.4
10	3.22
11	3.07
12	2.85

Garamont No. 248

6	4.69
8	3.44
9	3.00
10	2.72
11	2.44
12	2.24
14	2.01
18	1.58
24	.97

Garamont Italic No. 248

6	5.4
8	3.98
9	3.5
10	3.14
11	2.83
12	2.59
14	2.34
18	1.82
24	1.39

Garamont Bold No. 548

6	3.68
7	3.29
8	3.01
9	2.75
10	2.61
11	2.47
12	2.31
14	2.08
18	1.6
24	1.23

Garamont Bold Italic No. 548

6	4.02
7	3.61
8	3.28
9	2.99
10	2.86
11	2.7
12	2.52
14	2.25
18	1.97
18	1.76
24	1.37

Gothic Modernized Alternate No. 51

6	5.4
8	4.5
10	3.86
12	3.38

Gothic Franklin No. 107

4	4.78
6	3.98
6	3.16
7	2.9
8	2.67
10	2.12
12	1.88
14	1.57
18	1.27

Gothic Alternate No. 2 No. 77

6	5.4
8	4.15
10	3.38
12	2.85

Gothic Condensed No. 49

5	4.92
6	4.5
8	3.38
10	2.7
12	2.25

Gothic Globe No. 240

8	3.82
8	3.15
10	2.69
12	2.24

Gothic Globe Condensed No. 239

6	4.86
8	4.12
10	3.35
12	2.82

Gothic Globe Extra Condensed No. 230

6	5.96
8	4.86
10	4.11
12	3.56

Gothic Inclined No. 254

6	2.98
7	2.65
8	2.39
10	1.91

Gothic Inclined Bold No. 132

6	3.18
8	2.65
10	2.17
12	1.91

Gothic Lining Light No. 106

6	3.73
8	3.17
10	2.58
12	2.25

Gothic Lining No. 176

6	3.85
8	3.5
10	3.17
12	2.7

Gothic Lining No. 545 No. 66

5	3.98
6	3.41
8	2.8
10	2.27
12	1.91

Gothic Philadelphia Lining No. 52

6	3.41
8	2.84
10	2.38
12	1.99

Gothic Tourist No. 140

6	5.4
8	4.15
10	3.38
12	2.92

Goudy Bold No. 294

6	3.66
8	3.01
10	2.48
12	2.15
14	1.79
18	1.42
24	1.13

Goudy Bold Italic No. 294

6	3.71
8	3.05
10	2.52
12	2.19
14	1.86
18	1.48
24	1.17

Goudy Cursive No. 324

Allow for Swashes

14	2.18
18	1.74
24	1.37

Goudy Handtooled No. 383

10	2.48
12	2.16
14	1.79
18	1.43
24	1.13

Goudy Handtooled Italic No. 383

10	2.57
12	2.24
14	1.87
18	1.49
24	1.18

Goudy Heavyface No. 380

14	1.53
18	1.21
24	.91

Goudy Heavyface Italic No. 380

14	1.49
18	1.18
24	.89

Goudy Heavyface Condensed No. 382

12	2.21
14	1.89
18	1.44
24	1.1

Goudy Lanston No. 279

14	2.07
18	1.57
24	1.2

Goudy Light No. 38

6	3.81
7	3.33
8	3.13
9	2.89
10	2.65
11	2.42
12	2.22

Goudy Light Italic No. 38

6	4.15
7	3.63
8	3.42
9	3.23
10	2.9
11	2.64
12	2.42

Goudy Modern No. 293

12	2.44
14	2.1
18	1.59
24	1.2

Goudy Modern Italic No. 293

12	2.58
14	2.17
18	1.73
24	1.28

Goudy Old Style No. 394

6	3.99
8	3.25
10	2.68
12	2.34
14	1.95
18	1.56
24	1.24

Goudy Old Style Italic No. 394

6	4.43
8	3.62
10	2.98
12	2.59
14	2.18
18	1.74
24	1.37

Goudy Open No. 291

14	1.86
18	1.56
24	1.2

Goudy Open Italic No. 291

14	2.17
18	1.6
24	1.23

Goudy Village No. 410

14	2.1
18	1.64

Goudy Village Italic No. 410

14	2.46
18	1.92

Granjon No. 400

8	3.58
9	3.26
10	2.99
11	2.75

Granjon Italic No. 400

8	3.91
9	3.55
10	3.26
11	3.02

Hadriano No. 309

14	1.77
18 ±2	1.61 1.34
24	1.07

Hess Bold No. 159

6	3.4
8	2.79
10	2.27
12	1.98

Hess Bold Italic No. 159

6	3.4
8	2.79
10	2.27
12	1.98

Hess Old Style No. 242

6	3.83
8	3.15
9	2.99
10	2.67
11	2.42
12	2.23
14	1.79
18	1.42
24	1.07

Hess Old Style Italic No. 242

6	4.26
8	3.44
9	3.23
10	2.91
11	2.64
12	2.43
14	1.96
18	1.58
24	1.19

Hess Title No. 161

6	3.4
7	2.98
8	2.79
10	2.38
12	1.98

Hess Title Italic No. 161

6	3.4
8	2.79
10	2.38
12	1.98

Ionic No. 56

5	3.66
5½	3.4
6	3.29
7	3.08
8	2.79

Italian Old Style Italic No. 243

8	3.19
10	2.73
12	2.38
14	2.11
18	1.66
24	1.27

Italian Old Style Italic No. 243

8	3.32
10	2.84
12	2.49
14	2.19
18	1.74
24	1.32

Janson No. 401

8	3.29
9	3.1
10	2.79
11	2.55
12	2.33
14	2.09
18	1.65

Janson Italic No. 401

8	3.46
9	3.27
10	2.94
11	2.68
12	2.45
14	2.09
18	1.65

Jenson Old Style No. 58

6	3.86
8	3.17
10	2.7
12	2.25

John Hancock No. 142

5½	3.29
6	3.07
8	2.58
10	2.17
12	1.97

Kennerley Old Style No. 268

6	4.51
8	3.62
9	3.18
10	2.93
11	2.62
12	2.41
14	2.1
18 ±2	1.92 1.54
24	1.23

Kennerley Old Style Italic No. 268

6	4.73
8	3.82
9	3.34
10	3.1
11	2.79
12	2.58
14	2.24
18	2.03
18 ±2	1.65
24	1.34

Kennerley Bold No. 269

6	3.43
8	2.74
10	2.39
12	2.
14	1.77
18	1.61
18 ±2	1.33
24	1.07

Kennerley Bold Italic No. 269

6	3.57
8	2.85
10	2.5
12	2.08
14	1.85
18	1.67
18 ±2	1.4
24	1.11

Modern Condensed No. 1

6	4.42
8	3.82
10	2.96

Modern Condensed Italic No. 1

6	4.84
8	4.16
10	3.21

Modern Medium Condensed No. 14

8	3.33
12	2.43

Modern Medium Condensed Italic No. 14

8	3.65
12	2.65

Modern No. 34

6	4.12
8	3.33
9	3.11
10	2.8
11	2.66
12	2.43

Modern Italic No. 34

6	4.48
8	3.64
9	3.42
10	3.06
11	2.9
12	2.65

Modern No. 8

4	5.33
4½	4.44
5	4.12
6	3.83
7	3.33
8	3.11
9	2.96
10	2.67
11	2.43
12	2.22
14	1.91
18	1.48

Modern Italic No. 8

4	5.8
4½	4.85
5	4.48
6	4.15
7	3.64
8	3.42
9	3.23
10	2.9
11	2.65
12	2.43
14	2.06
18	1.61

New Bookman No. 398

14	1.68
18	1.3
24	.98

Nicholas Cochin No. 461

14	2.31
18	1.98
24	1.39

Original Old Caslon No. 337

7	3.68
8	3.34
9	2.98
10	2.67
11	2.44
12	2.23
14	2.14
18	1.75
22	1.56
24	1.3

Original Old Caslon Italic No. 337

7	4.02
8	3.65
9	3.23
10	2.91
11	2.66
12	2.43
14	2.33
18	1.88
22	1.7
24	1.48

Pabst Old Style No. 45

6	3.84
8	3.18
10	2.7
12	2.25

Post Text No. 5

5½	3.66
6	3.46
7	3.14
8	2.96
9	2.73
10	2.54
11	2.32
12	2.12

Post Text Italic No. 5

5½	4.0
6	3.8
7	3.42
8	3.23
9	3.01
10	2.77
11	2.53
12	2.32

Ronaldson Old Style No. 16

6	3.82
7	3.34
8	3.13
9	2.96
10	2.66
11	2.42
12	2.22

Ronaldson Old Style Italic No. 16

6	4.15
7	3.63
8	3.42
9	3.21
10	2.9
11	2.64
12	2.42

Sans Serif Bold No. 330

6	4.23
8	3.37
10	2.86
12	2.49
14	2.17
18	1.97
24	1.49

Sans Serif Bold Italic No. 330

6	4.26
8	3.3
10	2.81
12	2.44
14	2.16
18	1.94
24	1.49

Sans Serif Extrabold No. 332

6	3.55
8	2.94
10	2.39
12	2.08
14	1.77
18	1.6
24	1.23

Sans Serif Extrabold Italic No. 332

8	3.01
10	2.56
12	2.22
14	1.81
18	1.67
24	1.25

Sans Serif Extrabold Condensed No. 333

14	2.16
18	1.94
24	1.46

Sans Serif Light No. 329

6	4.27
8	3.36
10	2.89
12	2.51
14	2.55
14 ±2	2.2
18	1.98
24	1.56

Sans Serif Light Italic No. 329

6	4.31
8	3.42
10	2.89
12	2.52
14	2.37
18	2.1
24	1.66

Sans Serif Light Cond. No. 357

14	2.89
18	2.64
24	2.05

Sans Serif Medium No. 331

6	4.23
8	3.35
10	2.85
12	2.48
14	2.29
18	2.12
24	1.59

Sans Serif Medium Condensed No. 354

14	2.54
18	2.36
24	1.73

Scotch Roman No. 36

6	4.12
8	3.34
9	2.98
10	2.67
11	2.44
12	2.23
14	1.89
18	1.46
24	1.12

Scotch Roman Italic No. 36

6	4.47
8	3.65
9	3.23
10	2.91
11	2.66
12	2.43

Stymie Light No. 190

6	3.92
8	3.23
10	2.61
12	2.2
14	1.82
18	1.44
24	1.15

Stymie Light Italic No. 190

6	3.56
8	2.94
10	2.38
12	1.99
14	1.75
18	1.39
24	1.11

Stymie Medium Italic No. 290

6	3.46
8	2.85
10	2.3
12	1.94

Stymie Bold No. 790

6	3.56
8	2.94
10	2.38
12	1.99

Stymie Bold No. 189

6	3.43
8	2.82
10	2.29
12	1.92
14	1.57
18	1.23
24	.97

Stymie Bold Italic No. 189

6	3.3
8	2.72
10	2.2
12	1.85
14	1.65
18	1.3
24	1.02

Stymie Light Cond. No. 690

14	3.27
18	2.61
24	2.07

Stymie Medium No. 290

6	3.92
8	3.23
10	2.61
12	2.2
14	1.73
18	1.39
24	1.09

Stymie Medium Italic No. 290

14	1.7
18	1.34
24	1.07

Stymie Medium Condensed No. 590

14	2.7
18	2.16
24	1.7

Stymie Extrabold No. 390

6	3.31
8	2.73
10	2.21
12	1.86
14	1.5
18	1.17
24	.91

Stymie Extrabold Italic No. 390

6	3.16
8	2.6
10	2.11
12	1.77
14	1.47
18	1.14
24	.89

Stymie Extrabold Condensed No. 490

14	2.18
18	1.73
24	1.36

Twentieth Century Light No. 606

6	4.68
8	3.51
10	3.08
12	2.81
14	2.26
18	1.7

Twentieth Century Light Italic No. 606

6	4.92
8	4.0
10	3.2
12	2.78

Twentieth Century Medium No. 605

6	4.68
8	3.66
10	2.94
12	2.44
14	2.09
18	1.63

Twentieth Century Medium Ital. No. 605

6	4.87
8	3.81
10	3.05
12	2.54

Twentieth Century Bold No. 604

6	4.0
8	3.48
10	2.61
12	2.26
14	2.01
18	1.53

Twentieth Century Bold Italic No. 604

6	4.5
8	3.94
10	2.94
12	2.55

Twentieth Century Extrabold No. 603

6	3.69
8	3.19
10	2.4
12	2.01
14	1.74
18	1.35

Twentieth Century Extrabold Ital. No. 603

6	3.82
8	3.3
10	2.48
12	2.07

Ultra Bodoni No. 675

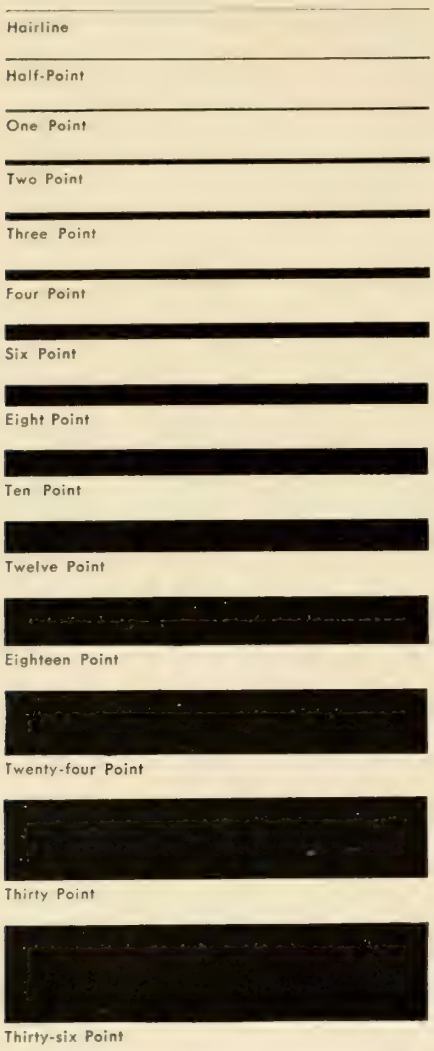
8	2.2
10	1.99
12	1.58
14	1.45
18	1.13
24	.83

Left-hand column lists point sizes. Right-hand column lists lower-case characters per pica.

Rules, borders, and ornaments

Wide variety of devices is available to embellish the printed word; careful planning, feeling for design essential in their use

Eugene De Lopatecki



Simple Rules



Oxford Rules

Co-existent with type itself, rules, "printers' flowers," and miscellaneous ornamental devices provide an inexhaustible reservoir of typographical material for the embellishment of printed words.

This material varies considerably in artistic merit and mechanical limitations, so that its successful use depends upon a feeling for nuances of design and color, and also upon careful planning and measurement.

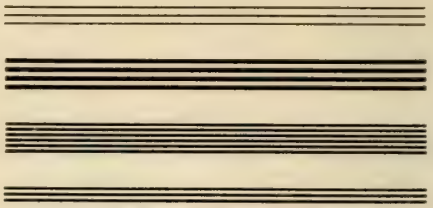
Single plain rules made of type metal are available in any desired length, cut from pre-cast strips or cast specially, and may be specified for any length in picas or points. When used for boxes, calibrated mitering machines cut the ends at a 45-degree angle so that the boxes may be made up to seem continuous all the way around, with no white space showing where the rules join.

Brass rules stand up under the rigors of printing better than type metal alloy, and come provided with special single-piece corners that carry the design around in continuous metal, the joints being made by abutting straight-out edges against the corner pieces. This method of constructing boxes obviates the always-present danger of white spaces' developing in the mitered corner.

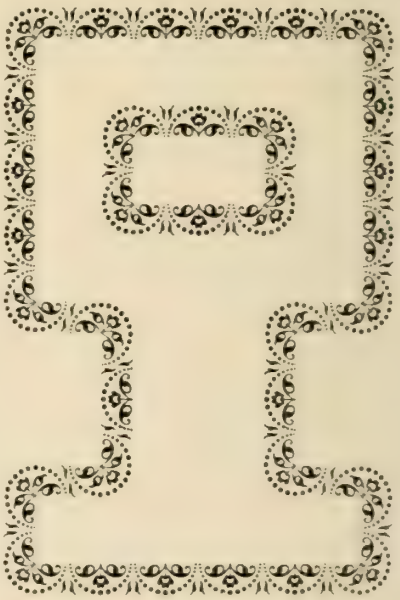
Parallel, multiple rules

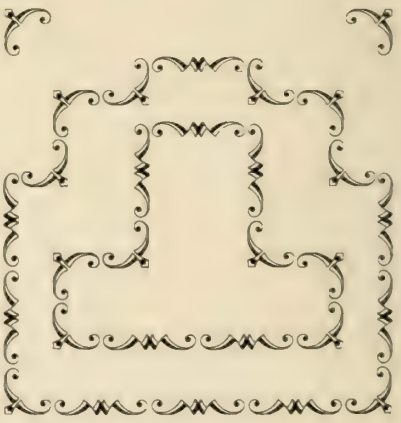
Oxford rules are parallel rules of differing point sizes, cast on a single body. Multiple rules are parallel rules, three or more in number, of the same or differing point sizes, cast on a single body. Oxford and multiple rules can be made up of separate units with the desired leading between if made-up patterns are not available.

Because plain rules, single or in combination, are of continuous design, they may be specified for any length without causing any difficulty at the corners of boxes. But for all other forms of ornaments for borders, in which the design is repeated to make the pattern, this freedom of measurement is not permissable. Measures must be indicated that are multiples of the basic unit, and



Multiple Rules

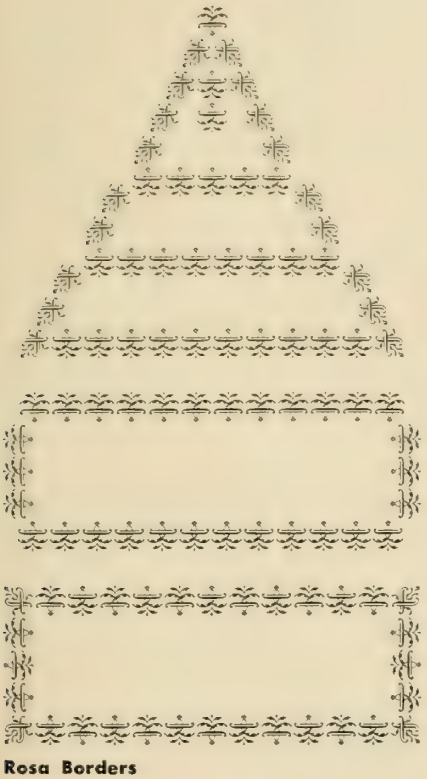




Teague Borders



Cleland Borders



Rosa Borders

if corners are to be turned to make boxes, special devices are necessary to produce a workmanlike job.

Ornament suitable for borders comes in two forms: sorts in foundry type or mats of individual units for Ludlow, Monotype, and slug casting machine composition; and matrix slides, for slug casting machines. Matrix slides are brass matrices in strip form, from which slugs for borders are cast in any desired measure in one operation.

To turn corners without destroying the pattern, there are two slug casting machine devices for use with matrix slides. One is the corner matrix, an individual mat of appropriate design to carry the pattern around when the box is made up. The other is a corner cut in the matrix slide itself, integral with it, at one end only.

The slug from such a slide shows a "hook" at one end, and only four pieces of cast material are needed to make up a box, whereas the first method requires eight pieces. The corners provided by the second method are said to be "lapped."

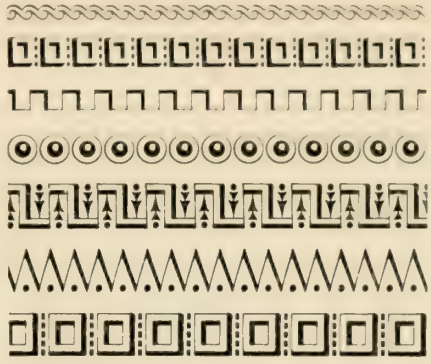
There is wide range of decorative material with affiliations for specific typefaces and families. Traditional Caslon ornaments, developed from motifs more ancient than the type face, are unsurpassed in fitness and charm. Bodoni ornaments, many based on Pompeian decoration, reflect the classic revival of which Bodoni's "Modern" faces were an expression, and harmonize perfectly because of the hair lines and heavy blacks that reflect the basic theme of the modern types. Nevertheless, since the trend at the moment is away from these styles, and their manufacture has been discontinued, they are not shown here.

Ruzicka, who designed Fairfield for Linotype, produced at the same time subtle and beautiful ornament to go with it. The Rosa brothers, Jacquish, Teague, Cleland, and Dwiggins in the last few years have provided ornaments to harmonize with the faces in common use.

Type and ornament combinations are controlled by the same principles that govern the mixing of two or more type faces in a single design: the typographic quality of the ornament—its texture, color, design, and distribution of stems and hairlines—should reflect the same aspects of the type used with it; or the ornament may be neutral, with even color and texture, to form a strong contrast with the type; or the ornament may be highly characteristic and decorative, with neutral type acting as a



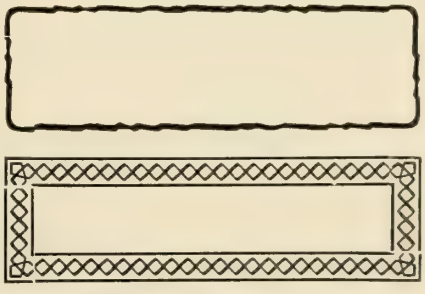
Ruzicka Ornaments



Dwiggins Ornaments

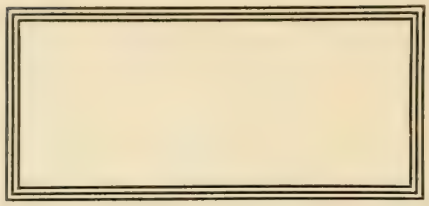


Continuous Border Slides



Matrix slide with lapped corners















foil to develop visually the beauty of the decorative material that is being used.

These three principles are exemplified in the following table of satisfactory all-type combinations and type-and-ornament combinations.

All-type combinations are:

1. Bodoni for text, Ultra Bodoni for display.
2. Bodoni for text, Futura for display.
3. Futura for text, Onyx for display.

The type-and-ornament combinations:

1. Bodoni for type, also ornaments.
2. Bodoni for type, multiple rules of same point size.
3. Futura for type, Oxford rules of sharply contrasted point sizes.

Type for ornament has four principal uses:

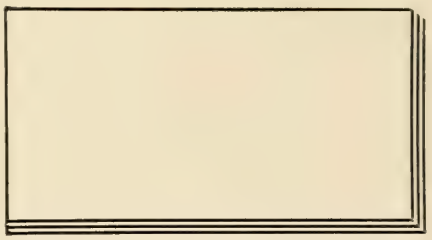
To embellish and enliven an otherwise dull typographic scheme.

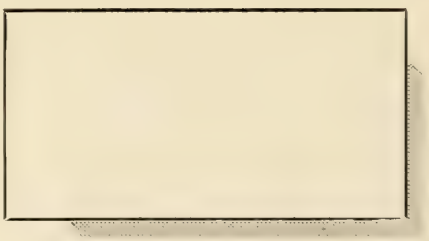
To supply the main visual interest and build the design to decorative impressiveness.

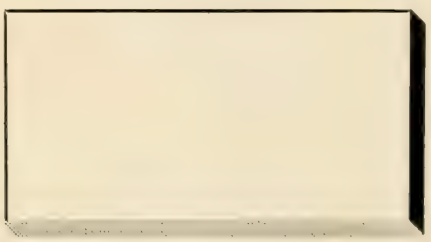
To act functionally to develop ease of reading, accentuate certain parts of the text, organize parts into groups, lead the eye in a desired direction, and bind the parts into a single unity.

To express specific ideas through the medium of type in actual "pictures."

To best identify and order rules, borders, ornaments and boxes, consult type manufacturers' or compositors' catalogs.



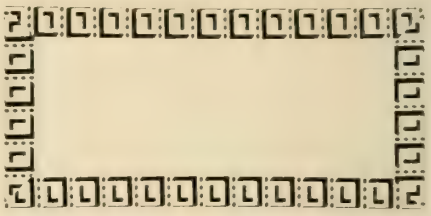




Shadow boxes







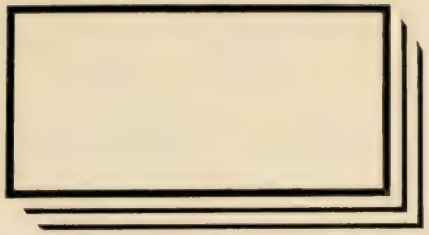


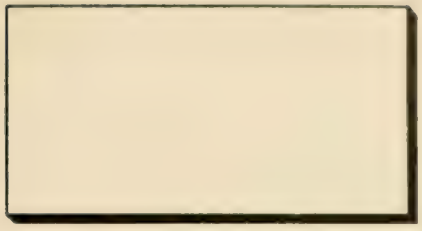








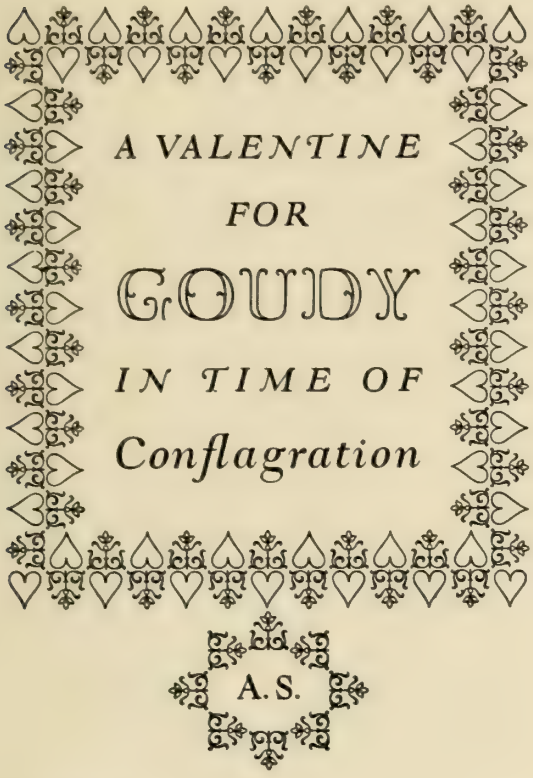




The functional use of type is characteristic of modern work, both in advertising and books, and has little in common with traditional practice. Streamlining and the livening of copy through the use of bullets, squares, triangles, arrows, and other simple shapes throws a decorative responsibility upon the ornament so used because these simple shapes tend to develop their own pattern against the background of text matter.

This secondary pattern becomes an organization in its own right that must be integrated with the type pattern. Good modern work owes its real effectiveness largely to the subtle choice and placing of the accessory material, whether spots, rules, or varying combinations of both.

The "Goudy Valentine" by Albert Schiller, shown below in reduced size, exemplifies the second and fourth uses of decorative material. The cover is definitely a piece of decoration where the ornament assumes the major role, and the "arch" is a subtle design of a few type ornaments made into an illustration whose specific purpose is fully obvious.

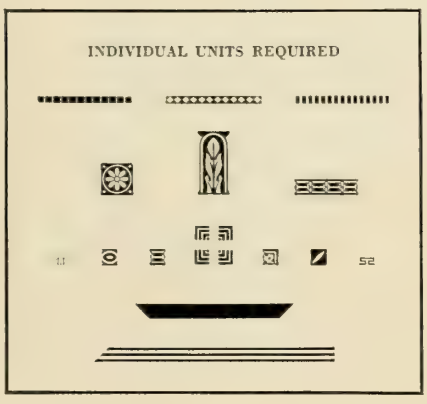




No raging fires can obliterate, no waters overwhelm, no winds blow down the towering monument that is your life. Dour TIME *itself, shall fail to crumble the mighty edifice of your works. Good friend, each ill that circumstance may send but prepares another warm, loving TRIUMPH for you in our HEARTS.*

Type pictures

The Goudy Arch, as I call this piece, is a happy example of the type picture, because it is composed of both ornaments and rules; and gives a simple and concrete impression of the object portrayed. This design depends for its ready acceptance on its good proportions and strong, unobstructed lines. . . The predominant ornament used to fill the body of the structure is a 6-point corner piece which is formed into squares. In the unit box I have placed four of these corners with extra space between them so that the individual corners may be observed. Technically, this counts for only one ornament, and together with one of the Cloister Initials (designed by Goudy, by the way) this makes



the total of different units required only 16, instead of the 18 as shown. . . In this picture it will be noticed how small details strategically placed can be made to mean much, as in the various minute outcroppings that contribute imaginatively to the shape and form of the arch. The perspective in the three passageways gives the entire structure an air of life and actuality. The shadow at the top of each, together with the gray-toned walls, shows depth and solidity. None but a 45° angle was employed for this effect.

NOTE: *These illustrations are from an insert that was bound into the volume, "Goudy Gaudeamus" which was prepared by Goudy enthusiasts after the fire which destroyed the mill at Deepdene in 1939.—Albert Schiller*

This is 10 point Futura Medium. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the la

This is 8 point Futura Demibold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps

This is 10 point Futura Demibold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox

This is 8 point Futura Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick bro

This is 10 point Futura Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown

This is 8 point Kabel Bold with Futura characters. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy

This is 10 point Kabel Bold with Futura characters. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick br

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This is 8 point Caslon Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the laz

This is 10 point Caslon Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick

This is 10 point Century Schoolbook. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quic

This is 10 point Lydian. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over th

This is 12 point Garamond Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The qu

This is 14 point Garamond Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over

This is 16 point Garamond Bold. The quick brown fox jumps over the lazy dog. The quick brown fo

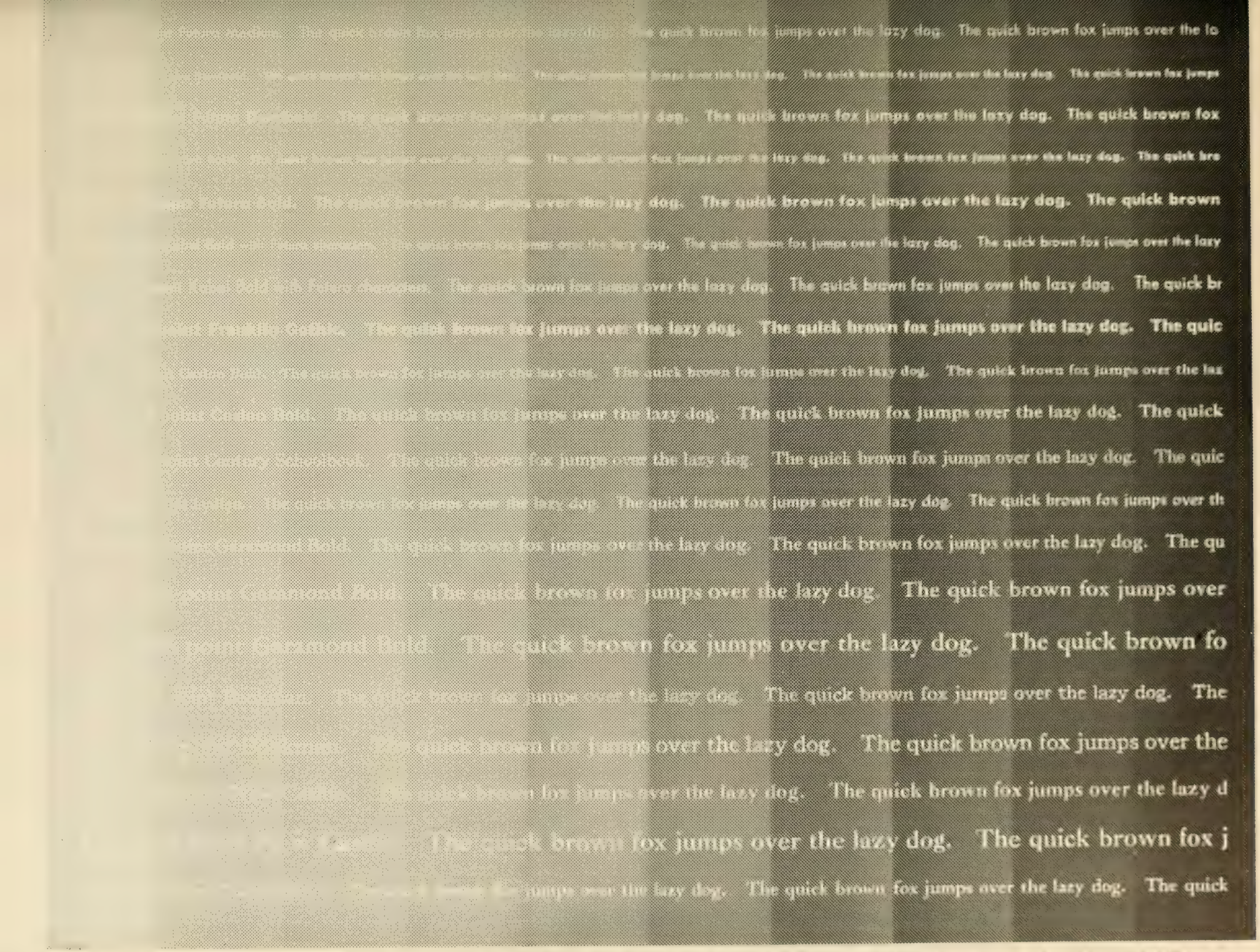
This is 12 point Bookman. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The

This is 14 point Bookman. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the

This is 12 point New Caslon. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy d

This is 14 point New Caslon. The quick brown fox jumps over the lazy dog. The quick brown fox j

This is 12 point Cloister Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick



Screened type, 55 screen, reversed: This demonstrates the appearance of the same 20 type faces as are on the preceding page, this time with a 55 line reverse screen, and again in a range of 12 type sizes

This is 8 point Futura Medium. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

This is 10 point Futura Medium. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over

This is 8 point Futura Demibold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

This is 10 point Futura Demibold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

This is 8 point Futura Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

This is 10 point Futura Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

This is 8 point Kabel Bold with Futura characters. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy

This is 10 point Kabel Bold with Futura characters. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

This is 8 point Franklin Gothic. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over th

This is 10 point Franklin Gothic. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

This is 8 point Garamond Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy

This is 10 point Bodoni Oldstyle. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps

This is 10 point American Bodoni Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

This is 8 point Caslon Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the

This is 10 point Caslon Bold. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

This is 10 point Scotch Roman. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jump

This is 8 point Caslon No. 540. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown

This is 10 point Caslon No. 540. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox ju

This is 8 point Bookman. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick

This is 10 point Bookman. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jum

This is 8 point Century Schoolbook. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over

This is 10 point Century Schoolbook. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quic

This is 10 point Cloister Oldstyle. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the la

This is 10 point Lydian. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over th

This is 18 point Commercial Script. The quick brown fox jumps over the lazy dog. The quick


The quick brown fox jumps over the lazy dog.
The quick brown fox jumps over the lazy dog.
The quick brown fox jumps over the lazy dog.

Improving readability

Twenty-nine simple typographic or layout ideas that may be followed to transform dull-appearing copy blocks into attractive, widely read messages

Charles Beckett

"Seen" and "read" are definitive terms used by research organizations when appraising the effectiveness of advertising. The percentages of interviewed readers who merely "see" and of those who "read" the magazine and newspaper advertisements under study are basic data used in determining the economic value of those ads.

Repeated tests prove that advertisements are read by an alarmingly small number of the persons who "see" them. The discrepancy is so startling that the question may well be asked, "Why have any text matter at all?"

The answer is, of course, that pictures cannot be expected to do everything, because there are factual and persuasive points in the copy that cannot be expressed through any other medium than printed words.

Studies directed to raising the present low percentage figures for complete "readership" inevitably point to the text matter as the part of current advertising that is doing the poorest job, and to the conclusion that greater thought and effort must be put into the design of the straight reading matter both to attract and to hold the reader's attention.

Improving readability

Improving the text so that more people who now "see" will become readers is not the duty of the typographer alone. Layout man and copy writer must contribute constructive work, and must be willing to make some sacrifices of space and arrangement if necessary, to make the straight text matter dynamic, lively, and inviting to read.

Text matter is often poorly read because the copy itself is dull or uninteresting. However, the best of selling copy may not even be started by the reader if badly handled typographically. It is too often placed in any spot left over after the illustration is fitted in, with the result that the reader's eye travels from illustration to signature and on to the next page without even a glance at the text, and this may miss the main point.

In size and position, the copy block must be integrated into the layout and the flow of the reader's eye across it. Even well-placed copy, however, is often forbidding because the copy block is too large or is typographically dull or unrelieved, so that reader interest flags.

What can be done

The following list describes or names some of the simpler and more obvious things that may be done to build up reading of the text:

1. Text should be strategically placed. A good position should be picked out for the straight matter, and the pictorial matter so designed as to have "pointers" —parts of its composition that direct the eye to the text.
2. Adequate space area should be set aside for text to enable it to be set in type large enough to be read easily.
3. If text is exceptionally long, it should be divided by main display lines or by the main illustration into well-proportioned blocks, thus making the placing of the type matter an integral part of the pictorial composition.
4. Small illustration instead of the conventional large initial letter.
5. Small illustrations between paragraphs or blocks of type.
6. Small marginal illustrations near isolated copy blocks, such as lists, rules, sales points, coupons.
7. Hand-drawn subheads or lead-ins.
8. A whole paragraph hand-drawn.
9. Hand-written margin notes beside the copy block or text material.
10. Subheads in color.
11. Underlining of parts of the text in color, particularly key words.
12. One or more paragraphs in color.
13. Simulated clippings have a news value and arouse reader curiosity.
14. Short paragraphs.
15. Conversational subheads, quoted. What people say is usually of interest to other people.
16. Asterisks connecting a word or phrase in the display matter with the text. People like to look for explanations. This trick helps to make the reader explore the forbidding barrenness of the text and keys the heading of the advertisement to the copy.
17. Staggered paragraphs, achieved by indenting alternate paragraphs left and right enlivens the copy block.
18. Double or triple indents for the first lines of paragraphs.
19. Alternate light and bold face paragraphs help eliminate monotony.
20. Alternate Roman and italic paragraphs help avoid monotony.
21. Ragged lines, right, left, or both.
22. The initial paragraph larger or bolder than the rest.
23. Large initials for each paragraph; one about every three or four, if the paragraphs are short.
24. Varying paragraph measures, to let in air around the text.
25. Printers' marks to start the paragraphs. Bullets, florets, guidons, etc., will relieve the eye.
26. Tabulate points in copy by use of numbers making copy easier to follow.
27. Bold face paragraph beginnings. This editorial technique is invaluable in advertising and gives text a newsy look.
28. Typewriter type used occasionally will kill the monotony of the more familiar type faces.
29. Unusually shaped type, blocks, Type set in circles, triangles, etc., develops more visual interest than the more commonly utilized rectangles.

Sympathetic handling

To sum up: Until the day arrives, if it ever does, when the whole advertising message can be delivered by pictorial symbols (pictures, display type, diagrams, ornament, trade-marks, logotypes, etc.), more or less of the copy must be expressed in reading matter.

This situation must be accepted, and because type is less intrinsically interesting to the eye than pictures, it requires special treatment and sympathetic handling to make it do its full part in developing complete reading of the entire sales message by the potential buyer.

Old-fashioned type faces

Old styles still are used to obtain special effects; 117 styles illustrated; available sizes are limited but reproduction proofs can be used

Frederic Nelson Phillips, Jr.

Old type styles are now going through a period of revival. The principal reason is that they are not old at all—just temporarily out of use. Many of those in the accompanying showings have served and continue to serve very modern and specific needs in the advertising and publishing fields.

Rustic, for example, is used to considerable advertising advantage by summer resorts. Certain "dated" faces are used more subtly to advertise period furniture, etc., or to help create an old-fashioned mood for the advertisement.

These faces not only add to the tone of the ad by helping to create a favorable atmosphere, but relieve the reader from the monotony of seeing the same "modern" faces over and over again.

The alert advertiser is quick to catch the public mood. He whets consumer desires until they become needs—and there you have a sale. Desires become needs when the right word or phrase, the right picture in art work, lettering, or type dovetails into the hope or desire of the potential customer.

A number of old-fashioned faces are obtainable now in many of the more progressive type shops. In most cases, as with the list below, the sizes available are quite limited and the fonts are small, so that it is usually necessary to make reproduction proofs, enlarge or reduce the copy to the desired size, and then do the printing from a line engraving.

Alexious Script

Antique Condensed No. 5

ANTIQUE EXT.

Antique Ext.

Antique Pointed

Aquatint

Archaic

ASTRAL

Bailey Shaded

BANGOR

BEAUMONT

Beckman

Benjamin Franklin

BISMARCK

Bizarre

Black Ornamented

Boston Breton

Bowl

Bristol Text

BROADGAUGE

BUFFALO BILL

Card Text Shaded

Caslon Antique

Caslon Antique Italic

Cathedral Text

CELTIC

Central Antique

Chancel

CLARENDON BOLD

Commercial Script

CONDENSED HORTO

OLD STYLE COND.

O. S. Shaded

ORLEANS OPEN

Ornamented

ORNATE

PASTEL COND.

Penelope

Phidian

Philadelphian

Philite

PLACARD

RADIANT

Ray Shaded

REFLECTION

Renaissant

Ripple Text

ROMANESQUE

Roman Rimmed

Roman Rimmed Condensed

ROUND SHADE

RUBENS

RUSKIN

RUSTIC

RUSTIC

Sacramento

SANGROFT

Salisbury Script

SIDEREI

SKELETON

SPINDLER SHADED

Teuton Text

TINTED

Title Text

Title Text Open

Treasury Open

TUSCAN SHADED

Victor

University

University Text Shaded

Waverly Circular

Constantine Shaded

CONTOUR NO. 1

CONTOUR 5

CONTOUR NO. 6

Crayon

Crown

Dallas

DEMETER

Egyptian Shaded

Engravers Open Extended

Engravers Roman

Erratick

Extra Condensed Black

Fancy Text

Fashion

FASHION COND.

Fashion Condensed

Filigree

Finesse

Flirt

French Clarendon

FRENCH CLARENDON EXT.

French Script

FRENCH SHADED

GENTRY

GLYPTIC

Grant Antique

Hair Line Italic

Hidalgo

Italic Gothic Condensed

JIM CROW

JUMBO

KINCAID

Kismet

Lady Text

Latin Antique

Latin Condensed

Light Face Celtic

Light Line Antique

Litho Antique

Meridian

Milano (Lafayette)

Monastic Shaded

MOTHER RUBBARD

Obelisk

Old Flemish

Composite type face directory

One-line showings of more than 1000 widely used text and display type faces; manufacturer and the available sizes are listed for each face

Compiled by the editors

On the following pages the reader will find over a thousand type faces, the current offerings of leading American foundries and manufacturers of composing machines.

Many imported faces shown in previous editions of the PRODUCTION YEARBOOK have been deleted from the current showing. Although some of these faces are still of interest, most of them are now difficult to obtain and as the old fonts are being exhausted or worn out replacements are not readily available.

The most recent faces of United States type manufacturers are listed, along with approximately 1000 other designs that are in wide use today. One-line showings of each face help the reader identify each and to get a general idea of the character of the letters, the weight of the face, etc. So that the reader can determine whether the face is available on a machine or is for hand composition the manufacturer of each face is listed. The faces made by the Intertype Corp. and by the Merganthaler Linotype Co. are for use on the machines made by those companies. For a description of how these machines compose and cast type, see pages 430 to 432.

Faces made by the Lanston Monotype Machine Co. are for use on their machines, which are described on page 432 and 433. Faces made by the Ludlow Typograph Co. are hand composed but cast on the Ludlow machine as described on page 433. Some large sizes of Monotype faces and all foundry type, such as that made by American Type Founders, Bauer Type Foundry, Inc., and Baltimore Type & Composition Co., are hand composed. For a description of hand composition methods see pages 429 and 430.

Following is a complete list of the symbols used to identify the type manufacturers:

A —American Type Founders
B —Bauer Type Foundry, Inc.
Bl —Baltimore Type & Composition Co.
I —Intertype Corp.
La —Los Angeles Type Foundry
Li —Mergenthaler Linotype Co.
Lu —Ludlow Typograph Co.
M —Lanston Monotype Machine Co.
N —Neon Type Foundry
RSW —Ruttle, Shaw & Wetherill, Inc.

As in past issues, the output of all these companies has been included without partiality. The designs are arranged alphabetically by their correct name and therefore can be easily located. In addition to listing the manufacturer of each face, the sizes in which each are manufactured is also given. Since Monotype faces are often identified or ordered by number as well as by their name, the number of each Monotype face is also given.

Every effort has been made to put this directory in a form readily accessible and convenient for the user of type. It is arranged so that each Roman face is immediately followed by its italic, to simplify comparison. Wherever possible, 14-point specimens are shown.

In a few cases however, 14-point was not available for this purpose and the face was set in the nearest available size, or enlarged or reduced photographically. However, this deviation from the practice is noted in the reference lines beneath the face.

For a visualization of how the text faces appear in text size and in blocks of copy, see pages 450 to 454 where 72 of the more commonly used text faces are illustrated and comparative color value of each is indicated. See also loose diecut sheet at page 450.

Adonis
I 10 to 18

AGENCY GOTHIC
A 12 to 120

AGENCY GOTHIC OPEN
A 48 to 72 (reduced)

Airport Black
Bl 14 to 72 (14 pt. shown)

AIRPORT BLACK CONDENSED TITLE
Bl 18 to 48

Airport Bold
Bl 6 to 72

Airport Bold Condensed
Bl 16 to 72

Airport Bold Condensed Italic
Bl 14 to 72

Airport Bold Italic
Bl 6 to 48

Airport Extra Bold Condensed (No. 610)
Bl 14 to 72

Airport Gothic
Bl 6 to 48

Airport Gothic Italic
Bl 6 to 48

A-American B-Bauer Bl-Baltimore I-Intertype Li-Linotype Lu-Ludlow M-Monotype

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Baskerville, Li. Color index. 12 2

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Bodoni Bold, I. Color index: 18.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Cairo Light, I. Color index: 12.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Baskerville Italic, I. Color index: 12.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Bodoni Bold Italic, I. Color index: 18.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Caledonia, Li. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Benedictine, Li. Color index: 15.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Bodoni Book, I. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Caslon, 137, Li. Color index: 12.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Bernhard Modern Bold, A. Color index: 21.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Bodoni Book Italic, I. Color index: 14.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are

Caslon 471, A. Color index: 16.2

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very

Bernhard Modern Roman, A. Color index: 17.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Bookman, Li. Color index: 18.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are

Caslon 471 Italic. Color index: 15.6

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Bodoni, I. Color index: 14.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Bulmer, A. Color index: 20.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Caslon 540, Li. Color index: 13.0

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"Type Color and Combination Visualizer" (trade mark). "Type Visualizer" (trade mark). Patent pending.
Printed in the United States of America.

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there

Century Bold Cond., A. Color index: 31.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Corvinus Medium, Bl. Color index: 18.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of

Electra, Li. Color index: 13.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Century Schoolbook, M. Color index: 19.9

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark

Deepdene, M. Color index: 12.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very

Estienne, Li. Color index: 13.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Cheltenham, Li. Color index: 14.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are infinite variations of tone.

Deepdene Italic, M. Color index: 12.9

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Fairfield, Li. Color index: 12.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Cloister Bold, I. Color index: 17.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print

De Vinne, I. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Franklin Gothic Cond., I. Color index: 24.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of

Cochin, M. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there

Eden Light, Lu. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark;

Futura Bold, I. Color index: 23.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Cochin Italic, M. Color index: 12.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Egmont Medium, I. Color index: 12.2

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print

Futura Bold Italic, I. Color index: 23.5

This "Type Visualizer" is to be used in conjunction with the "Composite Type Face Directory" on pages 478-520.
By placing one of the windows cut out on this sheet over a specimen display line in the type face directory a ready visualization may be obtained indicating how the display line and the block of text type beneath it look together.
The "Type Visualizer" makes more than 72,000 such visual combinations possible.

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Futura Demi Bold, I. Color index: 21.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Garamond, I. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark;

Goudy Bold, I. Color index: 16.2

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Futura Demi Bold Italic, I. Color index: 18.3

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Garamond Italic, I. Color index: 11.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Granjon, Li. Color index: 11.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Futura Light, I. Color index: 11.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Garamond Bold, I. Color index: 17.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Granjon Bold, Li. Color index: 16.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Futura Medium, I. Color index: 15.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark there are infinite

Garamond Bold Italic, I. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of

Italian Old Style, M. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are infinite vari-

Futura Med. Cond., I. Color index: 18.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and

Garamond No. 3, Li. Color index: 13.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Janson, Li. Color index: 13.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Futura Med. Italic, I. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Goudy, I. Color index: 13.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Kenntonian, I. Color index: 11.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Lydian, A. Color index: 21.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Memphis Med. Italic, Li. Color index: 17.7

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Scotch Roman, I. Color index: 12 0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Lydian Bold, A. Color index: 25.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

New Caslon, I. Color index: 16.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Times New Roman, M. Color index: 18.1

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Memphis Bold, Li. Color index: 21.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Number 16, I. Color index: 15.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print

Ultra Bodoni, Li. Color index: 29.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; be-

Memphis Bold Italic, Li. Color index: 18.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Old Style No. 7, Li. Color index: 14.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the ex-

Waverly, I. Color index: 15.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and

Memphis Extra Bold, Li. Color index: 32.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and

Remington Type, Li. Color index: 16.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very light and very dark there are

Weiss, I. Color index: 11.0

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between

Memphis Medium, Li. Color index: 16.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark; between the extremes of very

Scotch Italic, I. Color index: 11.5

Many factors enter into the choice of a type face besides legibility. One of the most important is weight or color. Some faces print light and some print dark, between the extremes of very light and very dark there are

Weiss Italic, I. Color index: 10.5

Airport Medium Condensed
Bl 14 to 72



Bl 36 [reduced]

Airport Semi-Bold
Bl 6 to 72

Airport Semi-Bold Italic
Bl 6 to 48

Airport Tourist
Bl 14 to 72

Alternate Gothic No. 1
A 6 to 72

Alternate Gothic No. 1
I 10 to 42

Alternate Gothic No. 2
A 6 to 72

Alternate Gothic No. 2
M [77] 6 to 36

Alternate Gothic Italic, No. 2
M [771] 14 to 36

Alternate Gothic No. 3
A 6 to 72

Alternate Gothic, No. 3
M [177] 14 to 36

Alternate Gothic, Modernized
M [51] 6 to 72

American Text
A 18 to 72

Announcement Roman
Announcement Italic
A 6 to 24

Antique No. 1 *Antique No. 1 Italic*
I 6 to 24; italic 6 to 24

Antique No. 1 *Antique No. 1 Italic*
Li 6 to 24; italic 6 to 18

Antique No. 3
I 6 to 14

Antique No. 3
Li 6 to 14

Antique Shaded
A 8 to 24

Artcraft Bold
Lu 6 to 48

Artcraft *Artcraft Italic*
Lu 10 to 48 [swash characters for roman and italic]

Artscript
M [225] 48 to 72 [reduced]

Authors Roman
A 6 to 12

BASE INITIALS
B 42, 54, 66 [reduced]

BALLOON BOLD
A 10 to 72

BALLOON EXTRABOLD
A 10 to 96

BALLOON LIGHT
A 10 to 36

BANK GOTHIC BOLD
A 6, 12, 4 sizes each; 18, 2 sizes

BANK GOTHIC COND. BOLD
A 6, 12, 4 sizes each; 18, 2 sizes

BANK GOTHIC COND. LIGHT
A 6, 12, 4 sizes each; 18, 2 sizes

BANK GOTHIC COND. MEDIUM
A 6, 12, 4 sizes each; 18, 2 sizes

BANK GOTHIC LIGHT
A 6, 12, 4 sizes each; 18, 2 sizes

BANK GOTHIC LIGHT
Li 6, 4 sizes; 12, 5 sizes

BANK GOTHIC MEDIUM
A 6, 12, 4 sizes each; 18, 2 sizes

BANK GOTHIC MEDIUM
Li 6, 4 sizes; 12, 5 sizes

Bank Script
A 14 to 48

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M - Monotype

Barnum, P. T.
A 6 to 36

Baskerville *Baskerville Italic*
Li 6 to 16; italic 6 to 14

Baskerville *Baskerville Italic*
I 6 to 24

Baskerville *Baskerville Italic*
M [353] 6 to 36

Baskerville Bold
I 6 to 14

Baskerville Bold
Li 7 to 14

Baskerville Bold
M [453] 8 to 72

Baskerville Bold Italic
Li 7 to 14

Baskerville Roman *Baskerville Italic*
A 6 to 36; italic 6 to 18

Bauer Text
B 8 to 48 [initials 30 to 72]

Bell *Bell Italic*
M[402] 8 to 36; italic 8 to 24

Bell Gothic Bell Gothic Bold
I 6, 7, 8

Bell Gothic Light Bell Gothic Bold
Li 6, 7, 8

Bembo *Bembo Italic*
M [405] 8 to 36

Benedictine ***Benedictine Italic***
Li 6 to 36; italic 6 to 30

Benedictine Bold
Benedictine Bold Italic
Li 8 to 36; italic 8 to 30

Benedictine Book
Benedictine Book Italic
Li 6 to 36; italic 6 to 30

Bernhard Book
B 10 to 14

Bernhard Brushscript
B 16 to 96 [reduced]

Bernhard Cursive
B 12 to 54

Bernhard Cursive Bold
B 14 to 72

Bernhard Fashion
A 12 to 36

Bernhard Fashion
I 12 to 18

Bernhard Gothic Extra Heavy
A 12 to 72

Bernhard Gothic Heavy
A 8 to 120

Bernhard Gothic Light
Bernhard Gothic Light Italic
A 6 to 72; italic 6 to 36

BERNHARD GOTHIC LIGHT TITLE
A 6, 12, 4 sizes each

Bernhard Gothic Medium
Bernhard Gothic Medium Italic
A 6 to 72

Bernhard Gothic Medium Condensed
A 12 to 96

BERNHARD GOTHIC MED. TITLE
A 6, 12, 4 sizes each

Bernhard Modern Roman
Bernhard Modern Italic
A 8 to 72

Bernhard Modern Bold
Bernhard Modern Bold Italic
A 8 to 72

Bernhard Roman *Bernhard Italic*
B 10 to 48; italic 10 to 36

Bernhard Tango
A 18 to 72

Bernhard Tango Swash Caps
A 30 to 120

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M - Monotype

this one's the

LION

We caged this beast of the print shop long ago, and taught him some remarkable things.

Leo typographicus has won so many awards for us he's in Who's Zoo.

He'll roar for us, purr for us, lie down and roll over. Two electrofying shows a day — day and nite.



If you want the best in typography and printing, ours is the King of Bests.

He may be a snarling man-eater in other places, but in our shop he's oh so gentle and obedient, after our im-press-ive course of taming.

FOR A SMART JOB ★ TRY TRI-ARTS

TRI-ARTS PRESS, INC. • 227 EAST 45th STREET • NEW YORK 17, N. Y. • MU 7-7262

this one's the LION TAMER



This is Tri-Arts Press, the noted Lion Tamer. He whips a lion of type into shape and makes him sing in upper or lower, quicker than you can say, "By galley!"

He opens up the eyes, spaces out the clause, makes the whole tale set better.

Dangerous work? Well—it does call for special skill, speed, talent. If our Tamer didn't have these—if he weren't case-hardened by 33 years experience—our story would surely have ended with a widow long ago—and that wouldn't be good typography.

FOR A SMART JOB: TRY TRI-ARTS

TRI-ARTS PRESS, INC. • 227 EAST 45TH STREET • NEW YORK 17, N. Y. • MU 7-7262

Beton Bold
B 8 to 84

Beton Bold
I 8 to 36

Beton Bold Condensed
B 14 to 84

Beton Extra Bold
B 14 to 84

Beton Extra Bold
I 8 to 36

Beton Extra Bold Oblique
I 8 to 24

Beton Light
B 8 to 48

Beton Medium
B 8 to 60

Beton Medium
I 6 to 24

Beton Medium Italic
I 6 to 24

Beton Medium Condensed
B 8 to 84

BETON OPEN
B 20 to 84 [reduced]

Beton Wide
I 8 to 24

Binny Old Style *Binny Old Style Italic*
M [21] 4½ to 36

BLAIR
A 6, 4 sizes; 12, 3 sizes

Bodoni *Bodoni Italic*
A 6 to 72; italic 6 to 36

Bodoni *Bodoni Italic*
I 6 to 36; italic 6 to 24

Bodoni *Bodoni Italic*
Li 6 to 72

Bodoni *Bodoni Italic*
Lu 12 to 42; italic 12 to 48

Bodoni *Bodoni Italic*
M [175] 5 to 36

Bodoni *Bodoni Italic*
M [375] 6 to 72

Bodoni Black
Bodoni Black Italic
Lu 6 to 72, Adv. figures to 144,
italic 12 to 48 [swash characters for italic]

Bodoni Bold *Bodoni Bold Italic*
A 6 to 144, italic 6 to 72

Bodoni Bold *Bodoni Bold Italic*
B 8 to 72; 8 to 42

Bodoni Bold *Bodoni Bold Italic*
I 6 to 48

Bodoni Bold *Bodoni Bold Italic*
Li 6 to 144; italic 6 to 72

Bodoni Bold *Bodoni Bold Italic*
Lu 6 to 72

Bodoni Bold *Bodoni Bold Italic*
M [275] 6 to 72

Bodoni Bold Condensed
I 18 to 36

Bodoni Bold Condensed
Li 18 to 36

Bodoni Bold Condensed
M [775] 14 to 84

BODONI BOLD PANELLED
M [575] 18 to 60; caps only [reduced]

Bodoni Book *Bodoni Book Italic*
A 6 to 36

Bodoni Book *Bodoni Book Italic*
I 6 to 14

Bodoni Book *Bodoni Book Italic*
Li 6 to 30

Bodoni Book
M [875] 6 to 36

Bodoni Book Italic
M [875] 6 to 36

Bodoni Campanile

Bodoni Campanile Italic
Lu 18 to 72; 96 pt. caps; Adv. figures to 240; italic 18 to 48

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M Monotype

Bodoni Modern
Bodoni Modern Italic
I 8 to 36; italic 8 to 24

Bodoni Modern *Bodoni Modern Italic*
Lu 6 to 72

Bodoni Open
A 10 to 48

Bodoni, Poster
Bodoni Italic, Poster
LI 8 to 144; italic 8 to 60

Bodoni Roman *Bodoni Italic*
B 8 to 42

BODONI SLIM
I 18 to 60

BODONI TITLE
B 42 to 72; caps only [reduced]

Bodoni, Ultra
Bodoni Italic, Ultra
A 6 to 120; italic 6 to 48

Bodoni Ultra
Bodoni Italic Ultra
M [675] 6 to 72

Bodoni Extra Condensed, Ultra
A 12 to 72

Bold Face No. 2
LI 5 to 14

BOLD FACE NO. 9
I 6, 4 sizes; 12, 6 sizes; 18, 2 sizes

BOLD FACE NO. 9
Li 6, 4 sizes; 12, 5 sizes; 18, 2 sizes

Bond Script
A 12 to 48

Bookface *Bookface Italic*
I 6 to 30; italic 6 to 24

Bookman *Bookman Italic*
Li 6 to 14

Bookman *Bookman Italic*
M [98] 6 to 36

Bookman *Bookman Italic*
Lu 12 to 48 [swash characters for roman or italic]

Bookman New
M [398] 14 to 72

Bookman Oldstyle *Bookman Italic*
A 6 to 36; italic 6 to 14

BOUL MICH
A 12 to 24

BOXHEAD GOTHICS
A 4, 4½, 5, 15 styles

BRANDON
A 6, 12, 4 sizes each

Britannic
BI 14 to 36

Broad-Stroke
M 14 to 36 [special]

BROADWAY
A 6 to 36; caps only

BROADWAY
M [306] 12 to 36

Broadway Condensed
A 6 to 36

BROADWAY ENGR.
M [307] 14 to 36; caps only

Bruce Old Style *Bruce Old Style Italic*
M [31] 6 to 12

Brush
A 12 to 84

Bulmer Roman *Bulmer Italic*
A 6 to 48

Cairo *Cairo Italic*
I 6 to 60; italic 6 to 24

Cairo Bold ***Cairo Bold Italic***
I 6 to 60; italic 6 to 24

Cairo Bold Condensed
I 8 to 36

Cairo Extra Bold Condensed
I 10 to 48

Cairo Heavy
I 6 to 18

Cairo Heavy Oblique
I 18

A-American B-Bauer BI-Baltimore I-Intertype Li-Linotype Lu-Ludlow M-Monotype

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Few faces are capable of the broad adaptability that the Lydians have demonstrated during the last nine years. These stylized, shaded sans serifs have the rich beauty of broad-pen hand lettering... combine comfortably with traditional or modern body types... and have proved their suitability to an extremely wide range of subjects. Smart and striking for advertising display, the Lydians are still so sound and simple in design as to be eminently readable in mass, and thoroughly reliable in reproduction in any size, on any stock, and by letterpress, offset lithography, or gravure.

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Lydian Italic

Lydian Bold

Lydian Bold Italic

Lydian Cursive

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American Type Founders

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An ATF Associate

Cairo Medium *Cairo Medium Italic*
I 6 to 30, italic 6 to 24

Cairo Medium Condensed
I 10 to 36

CAIRO OPEN
I 60 [reduced]

Caledonia *Caledonia Italic*
Li 6 to 14

Caledonia Bold
Li 6 to 36

Cameo *Cameo Italic*
Lu 12 to 72; italic 12 to 48

Camera
I 12 to 14

Canterbury
A 12 to 48

CAPTION
Li 24 to 42

Card Italic
Li 10 to 18

CARD LIGHT LITHO
A 6, 12, 4 sizes each

CARTOON BOLD
B 6 to 48

CARTOON LIGHT
B 6 to 36

Caslon *Caslon Italic*
I 6 to 30; italic 6 to 24

Caslon *Caslon Italic*
Li 7 to 36; italic 7 to 30

Caslon *Caslon Italic*
M [137] 6 to 12

Caslon, American
M [637] 8 to 72

Caslon Italic, American
M [637] 8 to 72

Caslon Bold *Caslon Bold Italic*
A 6 to 96; italic 6 to 36

Caslon Bold *Caslon Bold Italic*
I 6 to 30

Caslon Bold *Caslon Bold Italic*
Lu 6 to 72; italic 6 to 48

Caslon Bold *Caslon Bold Italic*
M [79] 5 to 72; italic 6 to 72

Caslon Bold Condensed
A 6 to 120

Caslon Bold Condensed
Li 14 to 72

Caslon Bold Condensed
Lu 6 to 72

Caslon Bold Extra Condensed
Lu 12 to 72

Caslon Condensed
M [113] 5 to 72

Caslon Light *Caslon Light Italic*
Lu 4 to 72; italic 6 to 72

Caslon, New
A 6 to 48

Caslon Italic, New
A 6 to 48

Caslon New
M [537] 6 to 72

Caslon Italic, New
M [537] 6 to 72

Caslon No. 2 *Caslon No. 2 Italic*
Li 6 to 12

Caslon No. 3 *Caslon No. 3 Italic*
I 6 to 30

Caslon No. 3 *Caslon No. 3 Italic*
Li 5 to 72

Caslon No. 137 *Caslon No. 137 Italic*
Li 7 to 12

Caslon Old Face
I 18 to 30

Caslon Old Face *Caslon Old Face Italic*
Li 6 to 84; italic 6 to 72

Caslon Old Face Heavy
Caslon Heavy Italic
Lu 6 to 48; italic 14 to 48

A-American B-Bauer Bl-Baltimore I-Intertype Li-Linotype Lu-Ludlow M-Monotype



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The range of Intertype faces is wide. No matter what typographic effect you desire—modern or period—you can achieve it with Intertype matrices. And with Intertype Wide-Tooth Matrices, you are assured of longer matrix life and smoother distribution.

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INTERTYPE

BROOKLYN 2. N. Y.

Caslon Oldstyle *Caslon Oldstyle Italic*
M [337] 7 to 36

Caslon Oldstyle No. 471
Caslon Oldstyle Italic No. 471
A 6 to 48

Caslon Oldstyle Italic No. 471 Swash
A 6 to 48

Caslon Oldstyle No. 472
A 18 to 24

Caslon No. 540 *Caslon Italic No. 540*
A 6 to 120; italic 6 to 96

Caslon Italic No. 540 Swash
A 36 to 96 [reduced]

Caslon Openface
A 8 to 48

Caslon Text
Li 10, 12

Caslon, True-Cut *Caslon, True-Cut Italic*
Lu 8 to 72 [swash characters for italic]

Century Bold ***Century Bold Italic***
A 6 to 120; italic 6 to 48

Century Bold ***Century Bold Italic***
I 6 to 48; italic 6 to 36

Century Bold ***Century Bold Italic***
Li 6 to 72; italic 8 to 48

Century Bold ***Century Bold Italic***
Lu 12 to 48; italic 12 to 72

Century Bold ***Century Bold Italic***
M [118] 5½ to 72; italic 6 to 72

Century Bold Condensed
A 6 to 72

Century Bold Condensed
I 12 to 30

Century Bold Condensed
Li 18 to 24

Century Bold Condensed Italic
M [418] 14 to 72

Century Bold Extended
Lu 12 to 60

Century Catalogue
Century Catalogue Italic
A 6 to 12

Century Expanded
Century Expanded Italic
A 4 to 30

Century Expanded
Century Expanded Italic
I 4 to 36; italic 4 to 14

Century Expanded
Century Expanded Italic
Li 4 to 24; italic 4 to 18

Century Expanded
Lu 12 to 42

Century Expanded
Century Expanded Italic
M [20] 6 to 72; italic 6 to 36

Century Oldstyle
Century Oldstyle Italic
A 6 to 24

Century Oldstyle *Century Oldstyle Italic*
M [157] 6 to 36; italic 6 to 12

Century Oldstyle Bold
A 6 to 36

Century Schoolbook
Century Schoolbook Italic
A 6 to 48

Century Schoolbook Bold
A 6 to 48

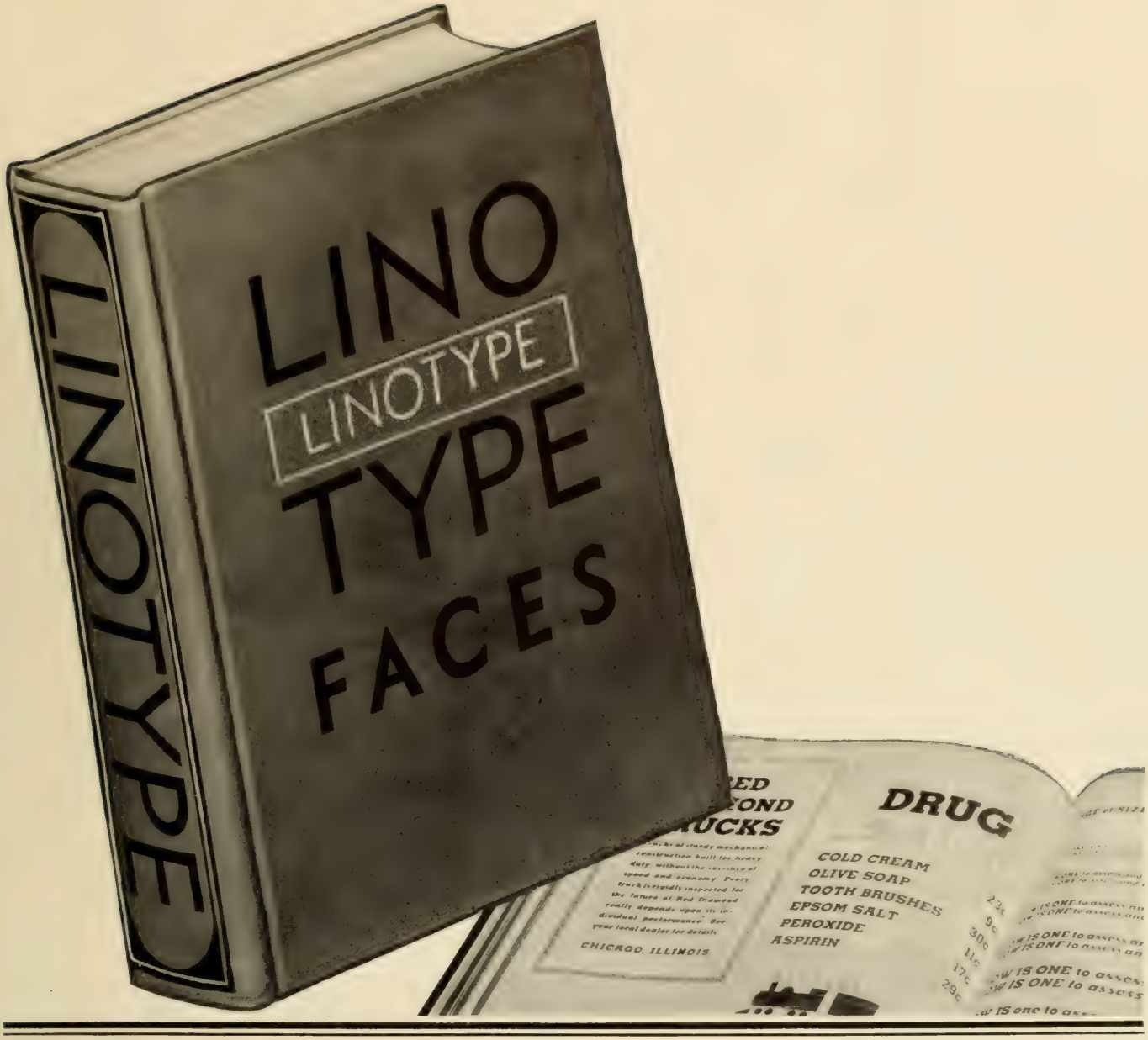
Century Schoolbook Bold
M [620] 6 to 16

Cheltenham *Cheltenham Italic*
Li 8 to 36; italic 8 to 30

Cheltenham Bold
Cheltenham Bold Italic
A 6 to 72; italic 6 to 36

Cheltenham Bold
Li 6 to 120

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M - Monotype



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Cheltenham Bold Italic
Li 6 to 48

Cheltenham Bold
Cheltenham Bold Italic
Lu 6 to 72

Cheltenham Bold
Cheltenham Bold Italic
M [86] 5 to 84; italic 5 to 72

Cheltenham Bold Condensed
Cheltenham Bold Condensed Italic
A 6 to 72; italic 10 to 60

Cheltenham Bold Condensed
Cheltenham Bold Condensed Italic
Li 6 to 120; italic 6 to 48

Cheltenham Bold Condensed
Cheltenham Bold Condensed Italic
Lu 6 to 72; Adv. figures to 120; italic 12 to 72

Cheltenham Bold Condensed
Cheltenham Bold Condensed Italic
M [88] 5 to 84; italic 6 to 72

Cheltenham Bold Extend.
A 6 to 72

Cheltenham Bold Extended
Lu 12 to 48

Cheltenham Bold Extend.
M [287] 6 to 36

Cheltenham Bold Extra Condensed
A 6 to 120

Cheltenham Bold Extra Condensed
Cheltenham Bold Extra Condensed Italic
Li 18 to 120; italic 24 [reduced]

Cheltenham Bold Extra Condensed
Lu 12 to 72

Cheltenham Bold Extra Condensed
M [141] 6 to 84

Cheltenham Bold Outline
A 8 to 72

Cheltenham Bold Outline
Lu 18 to 36 [reduced]

Cheltenham Bold Outline
M [12] 8 to 36

Cheltenham Condensed
Li 8 to 30

Cheltenham Condensed
M [264] 8 to 36

Cheltenham Extra Condensed Italic
Li 18 to 30

Cheltenham Medium
Cheltenham Medium Italic
A 6 to 36

Cheltenham Medium
M [186] 5 to 72; italic 9, 10, 11, 12

Cheltenham Medium Condensed
Li 8 to 30

Cheltenham Oldstyle *Cheltenham Italic*
A 6 to 48

Cheltenham Oldstyle
Cheltenham Oldstyle Italic
Lu 12 to 48 [cursive characters for italic]

Cheltenham Oldstyle
Cheltenham Italic
M [64] 6 to 72; italic 6 to 36

Cheltenham Oldstyle Condensed
A 6 to 18

Cheltenham Oldstyle Condensed
Lu 12 to 48

Cheltenham Wide
A 6 to 24

Cheltenham Wide
Li 6 to 14

Cheltenham Wide
Lu 6 to 36

Cheltenham Wide
Cheltenham Wide Italic
M [164] 6 to 36

Cheltonian *Cheltonian Italic*
I 7 to 36; italic 7 to 30

Cheltonian Bold
Cheltonian Bold Italic
I 6 to 60; italic 6 to 48

A-American B-Bauer Bl-Baltimore I-Intertype Li-Linotype Lu-Ludlow M-Monotype


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Simplified by the absence of serifs, but retaining a high degree of legibility because of distinct variation in weight of stroke, composition set in Radiant typefaces not only is most readable but emphasizes a new trend in modern type display.
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Ermines ..... $465 up
J. R. BUSHMAN CO.

Cheltonian Bold Condensed
Cheltonian Bold Condensed Italic
I 8 to 42; italic 8 to 30

Cheltonian Bold Extra Condensed
I 14 to 60

Cheltonian Bold Extra Condensed Italic
I 24 [reduced]

Cheltonian Condensed
I 18, 24

Cheltonian Medium
Cheltonian Medium Italic
I 8 to 24

Cheltonian Medium Condensed
I 18 to 30

Cheltonian Wide
I 6 to 36

Civilite
A 10 to 48

Clarendon Condensed
I 10 to 24

Classic *Classic Italic*
Li 8 to 14; italic 6 to 18

Clearface *Clearface Italic*
A 8 to 12; italic 5 to 36

Clearface *Clearface Italic*
M [89] 6 to 36

Clearface Bold *Clearface Bold Italic*
Li 24 [reduced]

Clearface Bold *Clearface Bold Italic*
Lu 18 to 48; italic 14 to 48 [reduced]

Cloister *Cloister Italic*
Li 6 to 72; italic 6 to 48

Cloister Black
A 6 to 48

Cloister Black
M [95] 6 to 36

Cloister Bold *Cloister Bold Italic*
A 6 to 36

Cloister Bold *Cloister Bold Italic*
I 6 to 36; italic 6 to 30

Cloister Bold *Cloister Bold Italic*
Li 6 to 72; italic 6 to 60

Cloister Bold *Cloister Bold Italic*
M [295] 6 to 72

Cloister Bold Tooled
I 14 to 36

Cloister Oldstyle *Cloister Italic*
A 6 to 36; italic 6 to 48

Cloister Old Style *Cloister Old Style Italic*
I 6 to 24; italic 6 to 18

Cloister Old Style *Cloister Old Style Italic*
M [395] 14 to 36

Cloister Wide
Li 6 to 14

Cochin *Cochin Italic*
M [61] 6 to 36

Cochin Bold
Cochin Bold Italic
M [616] 6 to 72; italic 6 to 36

Cochin Bold Nicholas
BI 12 to 48

Cochin, Nicolas
Cochin Italic, Nicolas
A 6 to 36; 2 sizes of 18 pt.

Cochin, Nicolas
Cochin Italic, Nicolas
M [461] 14 to 36

COCHIN OPEN
M [262] 18 to 36; caps only [reduced]

COMMERCE GOTHIC LIGHT
Lu 6, 12, 4 sizes each; 18, 2 sizes [large 12 pt. shown]

COMMERCE GOTHIC MED.
Lu 6, 12, 4 sizes each; 18, 2 sizes [large 12 pt. shown]

COMMERCE GOTHIC MED. COND.
Lu 6, 12, 4 sizes each; 18, 2 sizes [largest 12 pt. shown]

Commercial Script
A 12 to 60

Condensed Outline
Li 10 to 30

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Artscript meets the requirement
No. 225—18 to 72 point

Stylescript fully meets
No. 425—14 to 72 point

Flash is an excellent type
No. 373—14 to 72 point

STATIONERS GOTHIC
No. 84 Light—6 to 24 point

STATIONERS GOTHIC
No. 82 Medium—6 to 24 point

STATIONERS GOTHIC
No. 85 Bold—6 to 24 point

Glamour Light imparts an
No. 235—14 to 36 point

Glamour Medium also
No. 236—14 to 36 point

Glamour Bold is one
No. 237—14 to 36 point

Stymie Extrabold Cond.
No. 490—14 to 72 point

Stymie Ext'bold
No. 390—6 to 72 point

Janson typical of Dutch
No. 401—8 to 36 point

Janson Italic is for the most
No. 4011—8 to 36 point

Bembo possesses some of
No. 405—8 to 36 point

Bembo Italic can be used in
No. 4051—8 to 36 point

Alternate Gothic for trade
No. 77—6 to 36 point

Alternate Gothic It., No. 2
No. 771—14 to 36 point

20th Century Ultrabold Condensed can be used
No. 610—8 to 72 point

20th Century Ultrabold for ads
No. 609—8 to 72 point

20th Century Ultrabold Italic is
No. 6091—8 to 72 point

LANSTON MONOTYPE MACHINE COMPANY
TWENTY-FOURTH AND LOCUST STREETS, PHILADELPHIA 3, PA.

Send for the Monotype Booklet of One Line Display Faces

CONDENSED TITLE GOTHIC NO. 11
A 6 to 72; 6, 8, 2 sizes each

Cooper Black
A 6 to 120

Cooper Black
M [282] 6 to 72

Corona
Li 7½, 8, 8½, 10

Coronet *Coronet Bold*
Lu 14 to 72 pt. [18 pt. shown]

Corvinus Bold
B 8 to 84

Corvinus Bold (No. 257)
BI 8 to 36

Corvinus Light *Corvinus Italic Light*
B 4 to 48

Corvinus Medium *Corvinus Italic Medium*
B 8 to 60; italic 8 to 48

Corvinus Medium (No. 256)
BI 8 to 36

CORVINUS Skyline
B 10 to 84

Cushing *Cushing Italic*
M [25] 5 to 36; italic 6 to 36

Cushing Antique
Lu 12 to 42

Deepdene
Deepdene Italic
M [315] 6 to 72

Deepdene Bold
Deepdene Bold Italic
M [317] 6 to 72

Della Robbia
A 6 to 18

Della Robbia
M [231] 6 to 36

DELPHIAN OPEN
Lu 24, 36, 48, 60; caps only [reduced]

DE LUXE GOTHIC LIGHT
I 12, 5 sizes; 6, 4 sizes

DE LUXE GOTHIC MEDIUM
I 6, 4 sizes; 12, 5 sizes; 18, 2 sizes

DeVinne *DeVinne Italic*
I 6 to 14; italic 6 to 12

De Vinne *De Vinne Italic*
Li 6 to 14

DeVinne Condensed
Li 30

De Vinne Extra Condensed
Li 24

De Vinne Outline
De Vinne Outline Italic
Li 12 to 36; italic 12, 14

Eden Bold Eden Light
Lu Bold 10 to 72; Light 8 to 72

Egmont *Egmont Italic*
I 8 to 30; italic 8 to 24

Egmont Bold ***Egmont Bold Italic***
I 8 to 24

Egmont Initials
I 36 [reduced]

Egmont Medium
Egmont Medium Italic
I 8 to 36; italic 8 to 30

Electra *Electra Italic*
Li 7 to 14

Electra Bold
Li 8 to 14

Electra Cursive
Li 8 to 12

Elegante
BI 10 to 42

Elizabeth *Elizabeth Italic*
B 8 to 48

Elzevir
I 8 to 14

Elzevir No. 2
Li 18 to 36

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NEW YORK 10, N. Y.

Elzevir No. 3 *Elzevir No. 3 Italic*
Li 6 to 24; italic 6 to 14

EMPIRE
A 36 to 96

ENGRAVERS BODONI
A 6, 12, 4 sizes each

ENGRAVERS BOLD
A 6, 5 sizes; 12, 3 sizes; 18, 2 sizes; 24, 30, 36, 1 size each

ENGRAVERS BOLD
Lu 6, 4 sizes; 12, 3 sizes; 18, 2 sizes; 24, 1 size [large 12 pt. shown]

ENGRAVERS BOLD
M [323] 4½ to 24, 6, 4 sizes; 14, 2 sizes

Engravers Old English
A 6 to 72

Engravers Old English
I 12 to 36

ENGRAVERS ROMAN
A 6, 12, 3 sizes each; 18, 24, 1 size each

ENGRAVERS SHADED
A 6, 12, 3 sizes each; 18, 2 sizes

Engravers Text
A 10, 12, 14, 1 size each; 18, 24, 2 sizes each

Engravers Text
I 10 to 16

Erbar Bold Condensed
Li 8 to 144

ERBAR BOLD CONDENSED UNIQUE CAPS
Li 18 to 72

Erbar Light Condensed
Li 8 to 144

ERBAR LIGHT CONDENSED UNIQUE CAPS
Li 18 to 72

Erbar Medium Condensed
Li 18 to 42

ERBAR MEDIUM CONDENSED UNIQUE CAPS
Li 18 to 42

Estienne *Estienne Italic*
Li 8 to 18; italic 8 to 14

Eusebius *Eusebius Italic*
Lu 6 to 72; italic 8 to 72 [swash characters for italic]

Eusebius Bold *Eusebius Bold Italic*
Lu 6 to 72; italic 8 to 72 [swash characters for italic]

Eusebius Open
Lu 18 to 48 [18 pt. shown]

Excelsior *Excelsior Italic*
Li 5 to 14

Fairfield *Fairfield Italic*
Li 6 to 14

Flash
M [373] 14 to 72

Flash Bold
M [473] 14 to 72

FORUM
M [274] 10 to 48

Fournier
M [403] 8 to 36

FOURNIER CAPS
M [305] 18 to 30 [reduced]

Franklin Gothic
Franklin Gothic Italic
A 4 to 96; italic 6 to 72

Franklin Gothic
I 4 to 24; italic 6 to 14

Franklin Gothic
Franklin Gothic Italic
Li 18 to 144; italic 18 to 60

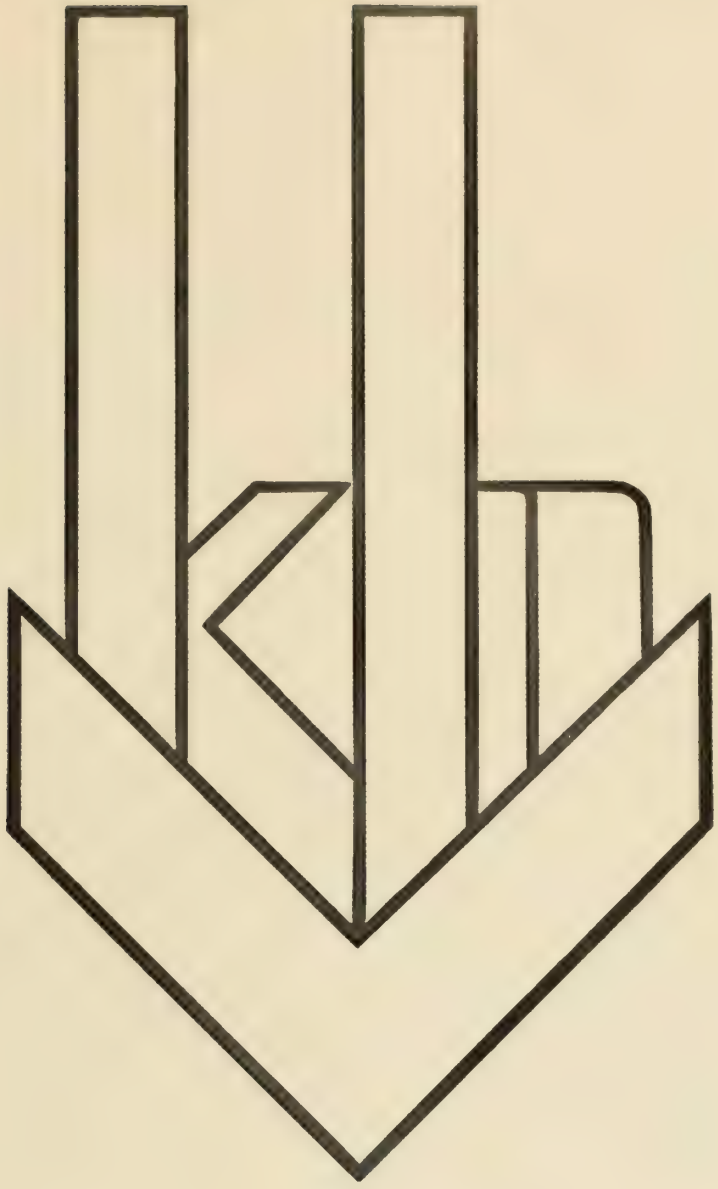
Franklin Gothic
Lu 6 to 72

Franklin Gothic
M [107] 4 to 72

Franklin Gothic Condensed
A 6 to 72

Franklin Gothic Extra Condensed
A 6 to 120

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M - Monotype



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ADVERTISING TYPOGRAPHERS SINCE 1922

Franklin Gothic Extra Condensed
Li 18 to 144

Franklin Gothic Extra Condensed
Lu 12 to 72; 84 and 96 pt. caps

Franklin Gothic Extra Condensed
M [507] 14 to 72

Freehand
A 6 to 48

Futura Bold
B 8 to 84

Futura Bold
I 6 to 24

Futura Bold Oblique
I 6 to 24

Futura Bold Condensed
B 8 to 84

Futura Bold Condensed
I 6 to 24

Futura Book
B 8 to 48

Futura Book *Futura Book Oblique*
I 6 to 14

Futura Demibold
B 8 to 84

Futura Demibold
I 6 to 30

Futura Demibold Oblique
I 6 to 18

Futura Display
B 14 to 84

FUTURA INLINE
B 18 to 72 [reduced]

Futura Light *Futura Oblique Light*
B 6 to 84; oblique 8 to 48

Futura Light *Futura Light Oblique*
I 6 to 14

Futura Medium *Futura Oblique Medium*
B 6 to 84; oblique 8 to 48

Futura Medium *Futura Medium Oblique*
I 6 to 24

Futura Medium Condensed
B 8 to 84

Futura Medium Condensed
I 8 to 24

Futura Oblique Bold
B 8 to 60

GALLIA
A 12 to 36; caps only

GALLIA
M [313] 14 to 72; caps only

Garamond *Garamond Italic*
A 6 to 72; italic 6 to 48

Garamond *Garamond Italic*
I 6 to 48

Garamond *Garamond Italic*
Li 6 to 36; italic 6 to 30

Garamond *Garamond Italic*
Lu 8 to 72 [swash characters for italic]

Garamond No. 3 *Garamond No. 3 Italic*
Li 6 to 42; italic 6 to 18

Garamond, American
M [648] 6 to 12

Garamond Bold *Garamond Bold Italic*
A 6 to 72

Garamond Bold *Garamond Bold Italic*
I 6 to 36; italic 6 to 30

Garamond Bold
Garamond Bold Italic
Li 6 to 36; italic 6 to 30

Garamond Bold *Garamond Bold Italic*
Lu 8 to 72 [swash characters for italic]

Garamond Bold *Garamond Bold Italic*
M [548] 6 to 72

Garamond Bold No. 3
Garamond Bold No. 3 Italic
Li 6 to 144; italic 6 to 72

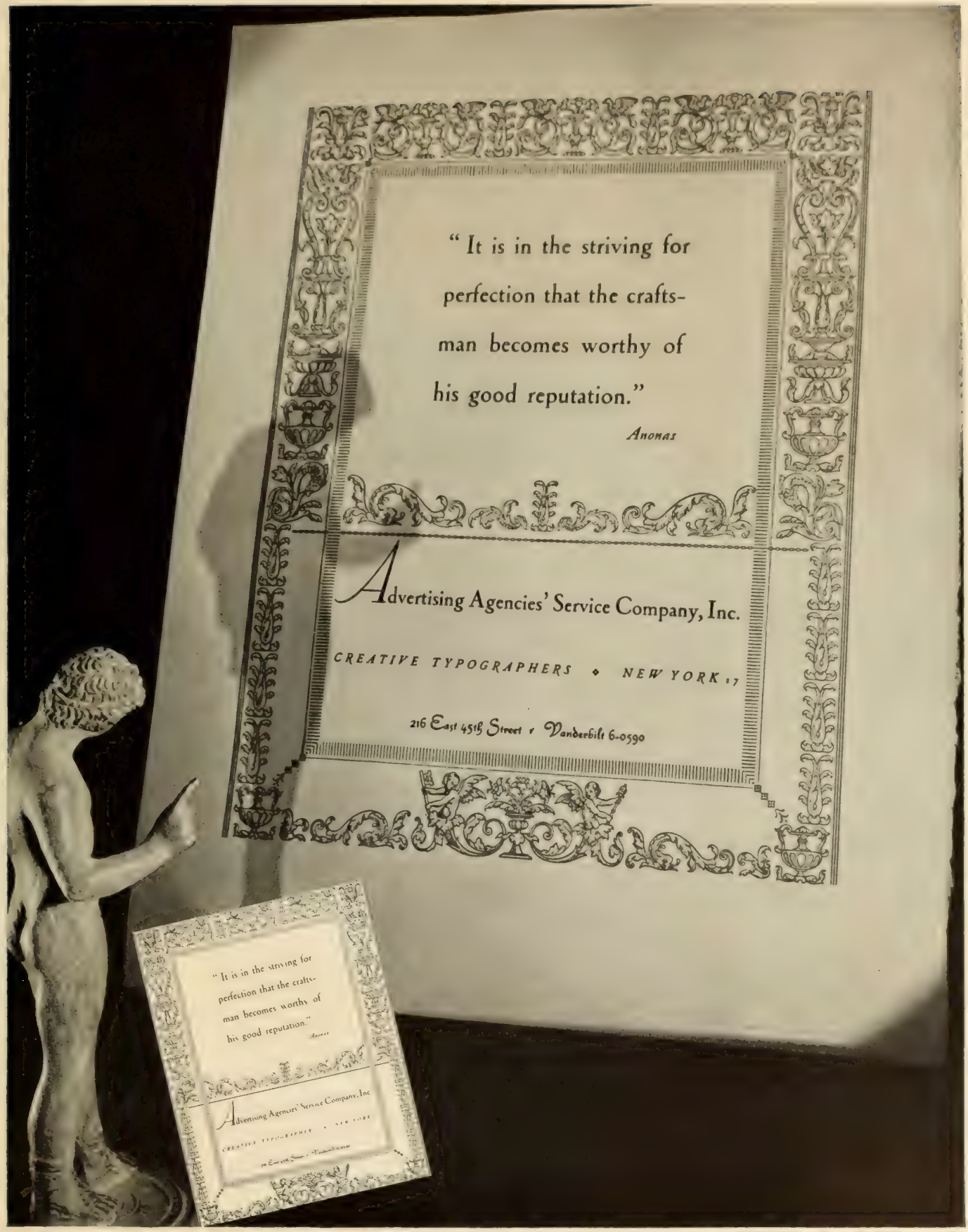
Garamond Open
A 18 to 72

Garamont *Garamont Italic*
M [248] 6 to 72

Gillies Gothic Bold
B 18 to 84 [reduced]

Gillies Gothic Light
B 18 to 84

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M - Monotype


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Girder
Bl 8 to 36

Glamour Light
M [235] 14 to 36

Glamour Medium
M [236] 14 to 36

Glamour Bold
M [237] 14 to 36

GOTHICS COPPERPLATE BOLD
A 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

HEAVY
A 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

HEAVY
M [168 & 342] 5 to 24; 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

HEAVY CONDENSED
A 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

HEAVY CONDENSED
M [169 & 343] 5 to 24; 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

HEAVY EXTENDED
A 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

ITALIC
A 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

LIGHT
A 6 to 12, 4 sizes; 18, 24, 2 sizes each

LIGHT
M [187 & 340] 5 to 24; 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

LIGHT CONDENSED
A 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

LIGHT EXTENDED
A 6 & 12, 4 sizes each; 18 & 24, 2 sizes each

Gothic No. 3
A 5½ to 14

GOTHIC NO. 12
I 7

Gothic No. 13
I 6 to 60

Gothic No. 13
Li 8 to 144

GOTHIC NO. 13 UNIQUE CAPS
Li 18 to 144

Gothic No. 14
I 18 to 60

Gothic No. 14
Li 18 to 60

Gothic No. 16
I 4 to 36

Gothic No. 16
Li 4 to 36

Gothic No. 18
Li 12 to 24

GOTHIC NO. 25
Li 6, 4 sizes; 8, 10, 12, 1 size each

GOTHIC NO. 26
Li 6, 2 sizes; 8, 10, 12, 1 size each

GOTHIC NO. 29
I 6, 4 sizes; 12, 5 sizes

GOTHIC NO. 29
Li 6, 12, 4 sizes each; 18, 2 sizes

GOTHIC NO. 30
I 6, 4 sizes; 12, 5 sizes; 18 1 size

GOTHIC NO. 30
Li 6, 12, 4 sizes each; 18, 2 sizes

GOTHIC NO. 31
I 6, 4 sizes; 12, 5 sizes

GOTHIC NO. 31
Li 6, 4 sizes; 12, 5 sizes; 18, 2 sizes

GOTHIC NO. 32
I 6, 4 sizes; 12, 5 sizes

GOTHIC NO. 32
Li 6, 4 sizes; 12, 5 sizes

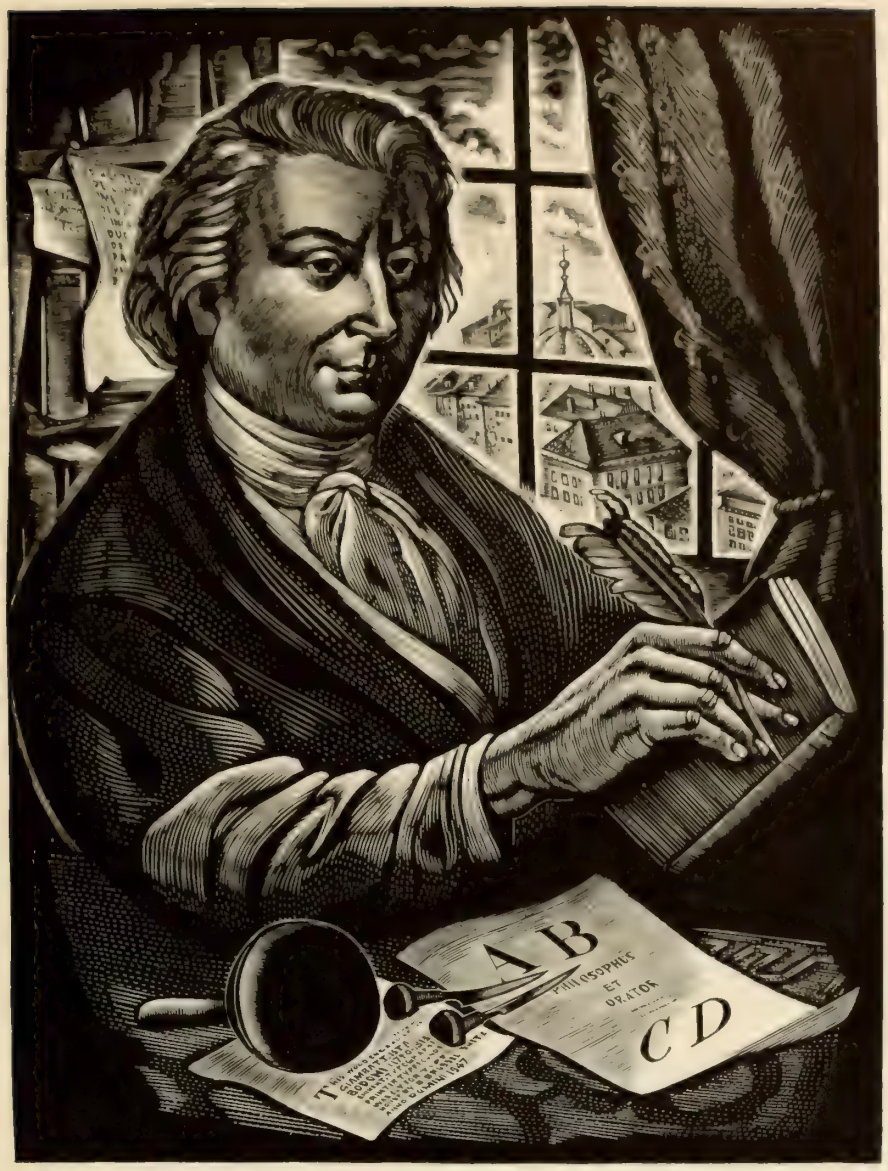
GOTHIC NO. 33
Li 6, 12, 4 sizes each

GOTHIC NO. 34
I 6, 4 sizes; 12, 5 sizes

GOTHIC NO. 35
I 6, 4 sizes, 12, 5 sizes

Gothic No. 38
Li 10 to 24

A-American B-Bauer Bl-Baltimore I-Intertype Li-Linotype Lu-Ludlow M-Monotype



PERPETUATING THE HERITAGE OF TYPE

"To be set in Bodoni," is a familiar phrase which has immortalized the name of Giambattista Bodoni — master craftsman of his day — pioneer in perpetuating the heritage of type. For generations past and for generations to come, his creations are standards of comparison and inspiration for fellow typographers. Intelligent selection and handling of type is an art in itself. That is why THE TYPE HOUSE employs only the *master craftsmen* of *our* day to carry out the responsibility of making each job a "Masterpiece".

THE TYPE HOUSE, INC. • 62 WEST 47th STREET, NEW YORK 19, N. Y. • LONGACRE 3-2376

Gothic No. 544
A 6 to 36

No. 545
A 6 to 72

Gothic No. 545
M [66 & 349] 5 to 36; 6 & 12, 4 sizes each

Gothic Bold Inclined
M [132] 6 to 12

Gothic Condensed
Lu 6 to 72

GOTHIC CONDENSED DELUXE VARIANTS
Lu 12 to 72 [18 characters caps & lower case]

Gothic Condensed No. 1
Li 8 to 18

Gothic Condensed No.1
I 11 to 24

Gothic Condensed No. 2
I 6 to 36

Gothic Condensed No. 2
Li 6 to 42

GOTHIC CONDENSED NO. 3
I 30 to 48

GOTHIC CONDENSED NO. 3
Li 20 to 60

Gothic Condensed No. 524
A 6 to 24

Gothic Condensed No. 529
A 6 to 72

Gothic Medium Condensed
Lu 6 to 72; Adv. figures to 144

GOTHIC MEDIUM COND. DELUXE VARIANTS
Lu 12 to 72 [20 characters caps and lower case]

Gothic Modern Condensed
A 6 to 72

GOTHIC NOS. 520 TO 526
A 6, 4 sizes; 8, 2 sizes; 10, 12, 18, 24, 30, 1 size each

GOTHIC OUTLINE TITLE NO. 61
A 12 to 72

Gothic Wide Bold Face
I 6 to 30

Goudy Bold *Goudy Bold Italic*
A 6 to 72

Goudy Bold *Goudy Bold Italic*
I 6 to 36

Goudy Bold *Goudy Bold Italic*
M [294] 6 to 72

Goudy Catalogue
Goudy Catalogue Italic
A 6 to 36; italic 6 to 24

Goudy Cursive
A 6 to 24

Goudy Cursive
M [324] 14 to 36

Goudy Handtooled
A 10 to 48

Goudy Handtooled
Goudy Handtooled Italic
M [383] 10 to 72

Goudy Heavyface
Goudy Heavyface Italic
M [380] 12 to 72; italic 14 to 72

Goudy Heavy Face Condensed
M [382] 12 to 72

Goudy Lanston
M [279] 14 to 36

Goudy Modern *Goudy Modern Italic*
M [293] 12 to 36

Goudy Oldstyle *Goudy Italic*
A 6 to 72; italic 6 to 36

Goudy Oldstyle
Goudy Oldstyle Italic
I 6 to 14

Goudy Old Style
Goudy Old Style Italic
M [394] 6 to 36

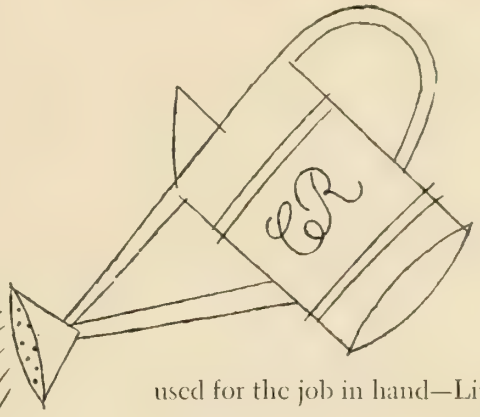
Goudy Open
Goudy Open Italic
M [291] 14 to 36

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M - Monotype



twenty years a'growin'

Boom, Collapse, Depression; Recovery, Recession, Pre War, War and now Post War Periods—through all of these ups and downs of the last twenty years, The Composing Room, Inc. born in 1927, at the beginning of the cycle, has flourished and grown strong. Perhaps it is because the owners of this shop set out to build a new kind of organization, one that would give its customers the best that modern methods in typesetting could produce. They felt that whichever method of composition suited it should be



used for the job in hand—Linotype, Intertype, Ludlow, APL (All Purpose Linotype) or hand setting. That, whether or not they were intended for reproduction, the very finest proofs should be furnished. That through its classes, its A-D Gallery, and for eight years PM—A-D magazine, it would help people to know more about typesetting and production generally and thus make it easier to serve them well. Every day is Open House Day at The Composing Room. Come in, meet our staff and see our work. Watch us grow!

the composing room, inc.

130 West 46th Street, New York 19, N. Y. • ME 3-2380

Send for "Type Index" which lists all of our type faces.
Ask too, for the Composing Room Primer.

Goudy Text
M [327] 10 to 72

Granjon *Granjon Italic*
Li 6 to 72; italic 6 to 48

Granjon *Granjon Italic*
M [400] 6 to 12

Granjon Bold
M [500] 6 to 12

Granjon Bold
Li 6 to 14

Graphic Bold Graphic Light
BI 12 to 48

Gravure
A 12 to 36

Grayda Swash Caps
A 18 to 96

Greenwich
Lu 36 to 72 [reduced]

Greeting Monotone
A 10 to 24

Greeting Monotone
I 10 to 18

Hauser Script
Lu 24 to 72 [24 pt. shown]

HEADLINE GOTHIC
A 24 to 48 caps only; 60 to 120 caps & lower case [reduced]

HEADLINE GOTHIC
Lu 30 to 60; caps only [reduced]

Heavy Caslon
A 6 to 72

Hess Bold
M [159] 6 to 36

Hess Old Style *Hess Old Style Italic*
M [242] 6 to 36

Hess Title
M [161] 6 to 36; italic 6 to 12

Hobo
A 6 to 48

Hobo
I 10, 12, 14

Hollywood
A 6 to 12

HOMEWOOD
BI 18 to 48

HUXLEY VERTICAL
A 18 to 120; caps only

Ideal *Ideal Italic*
I 5½ to 14

Ideal Bold
I 5½ to 14

Ideal Gothic
I 5½ to 14

Interscript
I 14

Invitation
A 6 to 24

Invitation Shaded
A 8 to 24

Ionic
M [56] 5 to 36

Ionic No. 5 *Ionic No. 5 Italic*
Li 5 to 12

Ionic Condensed
Li 18 to 36

Italian Old Style
Italian Old Style Italic
M [243] 8 to 36

Janson *Janson Italic*
Li 8 to 14

Janson *Janson Italic*
M [401] 8 to 36

JEFFERSON GOTHIC
M [227] 14 to 72

A-American B-Bauer BI-Baltimore I-Intertype Li-Linotype Lu-Ludlow M-Monotype

GOOD TYPOGRAPHY IS ELOCUTION IN PRINT

THE LECTURER, the orator, the spellbinder... words are their stock in trade. And, when blessed with magnetic personality and *eloquence*, they hold their audience in the hollow of their hands.

The author, the thinker, the writer of advertising copy... words are their stock in trade also. But, deprived of the benefit of personal delivery, *their* task of attracting and convincing audiences is by far a more difficult task.

The advertiser who buys expensive radio time, arranges a costly program with artists of fame and renown, knows from experience that his job is not complete until he has engaged the services of an eloquent announcer to dramatically present his program and product.

By the same token, the advertiser who contracts for expensive white space in newspapers, magazines, or in the form of direct-mail, employing creative talent to prepare copy and illustrations, has not done justice to his advertising effort until he has engaged the services of a good typographer to present his story eloquently to the reader-audience

For, through good typography, sound is substituted by visual expression that can be more eloquent than voice. Through the medium of type and its multitude of designs, shade and color, salient points can be expressed, forcefully and convincingly. In the maze of competing advertising messages, a legible, well-set advertisement will attract more readers, secure a greater audience.

* * *

BECAUSE we at Master recognize Elocution in Print as the true definition of typography we've been doing an unusual job for a constantly-growing distinguished clientele. Here cold type is given the warmth of sincerity, the strength of conviction—the *Master touch* that makes the reader stop, and read.

And, because we take particular pains to produce a FIRST proof that is as good as the FINAL proof, correction costs are reduced to a minimum. This is reflected in definite savings to our clients.

We are not so big as to lose the personal touch, yet big enough to handle any volume—from a one column advertisement to a multiple-page book. We have the type, equipment, machines and manpower. Every employee, whether messenger or supervisor, is imbued with the Master Spirit of cooperation.

If you are a buyer of typography, if you are as exacting about demanding good craftsmanship, dependable service and hearty cooperation as we are strong in our belief that our clients are entitled to all this—*plus*... then there *is* a basis upon which you and Master can get together for mutual benefit.

odd faces ...Write for *your* copy of this book, showing over 50 unusual type faces, some of which are exclusive with Master. No obligation.

MASTER TYPO
COMPANY

Advertising Typographers

209 WEST 38th ST • NEW YORK 18, N. Y.

Phone WISCONSIN 7—6272-73-74

"MASTER-SET *means* ELOQUENTLY SAID"

Jenson
M [58] 6 to 36

John Hancock
M [142] 4½ to 12

Karnak Black
Karnak Black Italic
Lu 10 to 72; italic 14 to 72

Karnak Black Condensed
Karnak Black Condensed Italic
Lu 14 to 144; Adv. figures to 144; italic 14 to 72

Karnak Intermediate
Lu 6 to 72

Karnak Intermediate Italic
Lu 8 to 48

Karnak Light
Lu 6 to 72 [round caps available]

Karnak Medium
Lu 6 to 72 [round caps available]

Karnak Obelisk
Lu 14 to 72 [round caps available]

Kaufmann Bold
A 10 to 96

Kaufmann Script
A 10 to 96

Kennerley Bold
Kennerley Bold Italic
M [269] 6 to 72

Kennerley Old Style
Kennerley Old Style Italic
M [268] 6 to 72

Kenntonian
Kenntonian Italic
I 6 to 36; italic 6 to 24

Keynote
A 24 to 96

Korinna
I 6 to 18

Korinna Bold
I 6 to 14

Lafayette Extra Condensed
Lu 18 to 48

Laureate
Lu 18 to 36 [18 pt. shown]

Law Italic
M [115] 8 to 12

Legend
B 18 to 72

Liberty
A 12 to 72

Lightline Gothic
A 6 to 36; 6, 2 sizes

LIGHTLINE TITLE GOTHIC
A 6, 12, 4 sizes each

Light Litho
A 6 to 24; 6, 2 sizes

Lilith
B 24 to 60

LINING CAIRO
I 6, 3 sizes; 12, 4 sizes

LINING CAIRO BOLD
I 6, 3 sizes; 12, 4 sizes

LINING CARD GOTHIC BOLD
Li 6 and 12

LINING CARD GOTHIC MEDIUM
Li 6 and 12

LINING LITHO LIGHT
LINING LITHO BOLD
Lu 6, 12, 4 sizes each; 18, 2 sizes

LINING MEMPHIS BOLD
Li 6, 3 sizes; 12, sizes

LINING MEMPHIS LIGHT
Li 6, 3 sizes; 12, 4 sizes

LINING METROMEDIUM
Li 6, 3 sizes; 12, 4 sizes

LINING METROTHIN
Li 6, 3 sizes; 12, 4 sizes

LINING PLATE GOTHIC BOLD
Lu 6, 3 sizes; 12, 4 sizes; 18, 24, 1 size each

LINING PLATE GOTHIC HEAVY
Lu 6, 12, 4 sizes each; 18, 24, 2 sizes each

LIN. PLATE GOTHIC HVY. EXT.
Lu 6, 12, 4 sizes each

A-American B-Bauer Bl-Baltimore I-Intertype Li-Linotype Lu-Ludlow M-Monotype

ARE YOU BRIGHT WITH TYPE?

TO ALL WHO VALUE GOOD TYPOGRAPHY: We had fun dreaming up this quiz, and we think you'll have fun casting the questions up against your type-lore. We've included the answers just by way of suggesting we're bright with type—and, frankly, we think we are. . . . Of course, you could get up a list of problems and have *us* wrinkling *our* brows. In fact, that's the whole idea of this page—to invite you to test our abilities in practical matters, such as rapid service, regular and uncommon type faces on hand in our shop, tough composition, *real* reproduction proofs, and first proofs that look like finals. . . . Won't you accept our invitation sometime—soon?

EMPIRE STATE CRAFTSMEN, INC.

115 EAST 23RD STREET, NEW YORK 10, N. Y. TELEPHONE: GRAMERCY 7-3373





1. What type faces appear in the head of this page? 2. How many picas to an inch? 3. What faces have the uncommon sizes, 21pt? . . . 13½pt? . . . 66pt? 4. What much-used face (ATF) has three sets of figures—old style, lining and Small Cap. lining—in each size? 5. Why should linotype Scotch or Original Old Style never be used in setting poetry? 6. Is the much-quoted ruling that lower case should never be letter-spaced sound?




7. What is the best single letter to use in identifying type faces? 8. In linotype, if a copy block would look just as well set 42 picas as 44 picas, why would it be better to keep it to 42 picas? 9. Can linotype be letter-spaced as little as ½pt? 10. Are the little animals and people used to decorate this page foundry ornaments, monotype, or linotype? 11. Why is it a good idea to let a hyphen at the end of a line overhang the measure?





12. How can you tell the number of characters in typewritten lines without counting them? 13. Can you describe each of the following: a ligature? . . . an umlaut? . . . a cedilla? . . . a diaeresis? . . . a logotype? . . . an ellipsis? . . . an ampersand? 14. Are Small Capitals cast in Italics? 15. Small Capitals are generally supplied in sizes up to 18pt, but what popular face has them all the way up to 36pt? 16. Which is a larger space unit—5-to-an-em or 3-to-an-em?





Answers on Page 549

17. In what popular face is the useful 36pt size not cut, although the range of the face ascends to 42pt? 18. Can a 14pt linotype face have a 13pt body? 19. How many type faces are named in the following sentence? *"Legend: Primitive Parisian hobo fell over regal Phyllis on Park Avenue."* 20. There are wrong fonts in each of the following sentences. Can you mark them? Most of this sentence is in Weiss. This sentence is set in Bulmer except for four characters.

LINING PLATE GOTHIC HEAVY COND.
Lu 6, 12, 4 sizes each, 18, 2 sizes

LINING PLATE GOTHIC LIGHT
Lu 6, 12, 4 sizes each, 18, 24, 2 sizes each

LIN. PLATE GOTHIC LT. EXT.
Lu 6, 12, 4 sizes each

LINING PLATE GOTHIC LIGHT COND.
Lu 6, 12, 4 sizes each, 18, 2 sizes

LINING VOGUE
I 12, 5 sizes

LINING VOGUE BOLD
I 12, 5 sizes

Lino Script
Li 18

Lino Text
Li 8 to 36

Litho Roman
A 6 to 36

LOMBARDIC CAPITALS
M [310] 18 to 72; caps only [reduced]

Lorimer *Lorimer Italic*
I 6 to 12

Lotus
I 10 to 18

Lucian *Lucian Italic*
B 10 to 72; italic 10 to 48

Lucian Bold
B 10 to 72

Lucian Open
B 14 to 48

Ludlow Black
Ludlow Black Italic
Lu 8 to 48; Adv. figures to 84; italic 12 to 48

Lydian *Lydian Italic*
A 10 to 96

Lydian Bold ***Lydian Bold Italic***
A 10 to 96

Lydian Cursive
A 18 to 72

MacFarland *MacFarland Italic*
M [68] 6 to 36

Mandate
Lu 18 to 72 [18 pt. shown]

Masterman
M [158] 5 to 36

Mayfair Cursive
Lu 14 to 72 [18 pt. shown]

Medieval *Medieval Italic*
I 6 to 24, italic 6 to 14

Medieval Bold
I 6 to 24

Memphis Bold
Memphis Bold Italic
Li 6 to 144; italic 6 to 30

Memphis Bold Condensed
Li 10 to 36

Memphis Extra Bold
Memphis Extra Bold Italic
Li 8 to 144; italic 8 to 18

Memphis Extra Bold Condensed
Li 8 to 144

Memphis Light
Memphis Light Italic
Li 6 to 144; italic 6 to 14

Memphis Medium
Memphis Medium Italic
Li 6 to 144; italic 6 to 48

Memphis Medium Condensed
Li 8 to 144

Metroblack No. 2
Metroblack No. 2 Italic
Li 6 to 144; italic 14 to 24

Metrolite No. 2 *Metrolite No. 2 Italic*
Li 6 to 144; italic 6 to 24

Metromedium No. 2
Metromedium No. 2 Italic
Li 6 to 144; italic 6 to 36

METROMEDIUM NO. 2 UNIQUE CAPS
Li 10 to 14

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M - Monotype

EXPERT WITHOUT *fanfare*

Here's an organization ennobling the work of other men, in everything we do with type.

We possess a wide range of type faces and batteries of Linotype and Monotype machines; and know how to use these tools. A full staff in the composing room and press department stands ready—day and night—to translate your copy and plans into manifest graphic expressions.

Master-Craftsmen. Honest workmen. Understanding artisans. The kind of men who are proud only when you are glad. That, to us, is the colophon of the real printer and the genuine typographer.

That is why we are easy to work with. We prefer taking pains to taking credit. We prefer beauty of production to bombast. We prefer fineness to fanfare.

What we do is not for ourselves but for others. That is why the plans of art director, of lay-out man and of production manager come together in our plant and are proved to the satisfaction of all collaborators in creation.

When you send your copy for typography and printing to this organization, we immediately become a part of you. After all, isn't that precisely what you want, when you entrust to other hands the graphic production of your messages? Our many regular clients, some of whom we have served for twenty years and more, know all this. One trial by you—and you will know it too.

FREDERICK W. SCHMIDT, INC.

Fine Typography and Excellent Printing

228-238 East 45th Street, New York City

Telephone: VAnderbilt 6-3550

Metrothin No. 2
Li 6 to 144

METROTHIN NO. 2 UNIQUE CAPS
Li 10 to 14

Minuet
I 10 to 18

Modern *Modern Italic*
M [8] 4 to 18

Modern Condensed *Modern Condensed Italic*
M [1] 6 to 10

Modern Extended *Modern Extended Italic*
M [5] 5½ to 12

MODERNISTIC CAPS
M [297] 18 to 36 [reduced]

Modern Roman No. 64
A 6 to 12

Modern Roman No. 64 Italic
A 6 to 12

Narciss
Li 10 to 36

NEON
N 18 to 54

Newport
A 6 to 36

News Gothic
A 6 to 72

News Gothic Condensed
A 6 to 72

News Gothic Extra Condensed
A 6 to 72

Nova Script
I 18

Nubian
A 6 to 36

Number 1 *Number 1 Italic*
Li 5½ to 12

Number 2 *Number 2 Italic*
Li 5½ to 12; italic 5½ to 8

No. 11 Bold *No. 11 Bold Italic*
Lu 6 to 72

No. 11 Light *No. 11 Light Italic*
Lu 6 to 48 [swash characters for italic]

Number Sixteen *Number Sixteen Italic*
I 6 to 12

Number 16 *Number 16 Italic*
Li 6 to 14

Number 21 *Number 21 Italic*
Li 6 to 12

Old Roman *Old Roman Italic*
Li 8 to 14

Old Style No. 1 *Old Style No. 1 Italic*
I 6 to 18; italic 6 to 12

Old Style No. 1 *Old Style No. 1 Italic*
Li 5 to 18; italic 5 to 14

Old Style No. 3 *Old Style No. 3 Italic*
Li 6 to 12

Old Style No. 7 *Old Style No. 7 Italic*
I 8 to 10

Old Style No. 7 *Old Style No. 7 Italic*
Li 6 to 24; italic 6 to 14

Old Style No. 9 *Old Style No. 9 Italic*
I 8 to 10

Onyx
A 18 to 120

Onyx
M [404] 24 to 72

Opticon *Opticon Italic*
Li 5½ to 12; italic 6 to 11

Original Old Style
Original Old Style Italic
Li 6 to 14

ORPLID
C 18 to 48; caps only

Othello
A 18 to 72

Pabst Extra Bold
Pabst Extra Bold Italic
Li 10 to 120; italic 10 to 48

Pabst Extra Bold Condensed
Pabst Extra Bold Condensed Italic
Li 10 to 72; italic 10 to 24

A-American Bl-Baltimore C-Continental I-Intertype Li-Linotype Lu-Ludlow M-Monotype N-Neon



Typography, as you know, is an art that is founded on mechanical skill plus good taste and a sense of proportion. We at Tudor have *earned* a reputation for typographic excellence.

Our composing room is one of the finest in New York, equipped with a complete complement of modern type faces both hand and machine set.

We have ample pressroom facilities for reprints: black and white or color.

We seek your business on the basis of our ability to do a *better* job . . . *faster . . . more economically.*

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DAY AND NIGHT SERVICE

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MUrray Hill 5-1042

Pabst Old Style
Pabst Old Style Italic
Li 10 to 18; italic 10 to 14

Pabst Old Style
M [45] 6 to 36

Palisade
I 18 to 48

Paragon *Paragon Italic*
Li 5½ to 10, italic 6 to 10

Paragon Bold
Li 5½ to 10

Paramount
A 8 to 36

Parisian
A 6 to 36

Parisian
I 10 to 18

Park Avenue
A 12 to 72

Park Avenue
I 12 to 18

Parsons
A 6 to 24

Pastel *Pastel Italic*
I 30 [reduced]

Pen Bold
I 10 to 36

Perpetua *Perpetua Italic*
La 10 to 48; italic 10 to 18

Phenix
A 24 to 72

Piranesi
Piranesi Italic
A 8 to 36

Piranesi Bold
Piranesi Bold Italic
A 6 to 36

Plantin *Plantin Italic*
Lu 6 to 12

Poster Bodoni Compressed
Li 18 to 72

POSTER GOTHIC
A 24 to 96 [reduced]

Powell
Lu 14 to 48

Primitive
I 14

Radiant Bold
Lu 6 to 72 [18 pt shown] [round caps available]

Radiant Bold Condensed
Lu 12 to 72 [round caps available]

Radiant Bold Extra Condensed
Lu 14 to 72; 96 pt. caps [round caps available]

Radiant Heavy
Lu 10 to 72 [round caps available]

Radiant Medium
Lu 6 to 72 [round caps available]

RAILROAD GOTHIC
A 8 to 120, 8, 10, 2 sizes each

Raleigh Cursive
A 10 to 72

RECORD GOTHIC
Lu 6 to 12

Regal **Regal Bold**
I 5 to 14

Regal Italic
I 5 to 12

Rex **Rex Bold**
I 4 to 14

Rex Italic
I 7 to 10

Rivoli *Rivoli Italic*
A 10 to 24

Rivoli
I 10 to 18

Rockwell Antique
M [189] 6 to 72

Roman No. 21 *Roman No. 21 Italic*
Li 6 to 12

Romany
A 12 to 72

Ronaldson
Li 6 to 12

Ronaldson Old Style *Ronaldson Old Style Italic*
M [16] 6 to 12

A - American B - Bauer Bl - Baltimore I - Intertype La - Los Angeles Li - Linotype Lu - Ludlow M - Monotype

"METICULOUS TYPOGRAPHY BY SKILLED MASTER CRAFTSMEN" "METICULOUS TYPOGRAPHY BY SKILLED MASTER CRAFTSMEN" "METICULOUS TYPOGRAPHY BY SKILLED MASTER CRAFTSMEN"

ADVERTISING TYPOGRAPHY

HOW TO SAVE TIME (and incidentally, wear and tear on your war-weary nerves) on your advertising typography—the formula is a really simple one... FIRST, have your copy set by an *advertising typographer* who specializes in a meticulous grade of composition ... SECONDLY, send your copy to one whose reputation is such that it has withstood the test of time (come depressions, wars, shortages of men and materials) ... THIRDLY, send your copy to one who is a member of the Advertising Typographers Association of America ... FINALLY, send your typography to the *Graphic Arts Typographers,* who are specialists in "meticulous typography by skilled master craftsmen." Our organization will intelligently execute your instructions. If you don't have the time to make a layout, just send us the copy, indicate the size of the type area, and leave the rest to *the advertising typographer* who has proved it by submitting "meticulous typography by skilled master craftsmen."

Graphic Arts TYPOGRAPHERS INC

228 East 45th Street, New York 17 • *'phone* MUrrayhill 2-5210

"METICULOUS TYPOGRAPHY BY SKILLED MASTER CRAFTSMEN" "METICULOUS TYPOGRAPHY BY SKILLED MASTER CRAFTSMEN" "METICULOUS TYPOGRAPHY BY SKILLED MASTER CRAFTSMEN"

Regal Script
A 12, 18, 1 size each; 24, 30, 2 sizes each; 36, 48, 1 size each

Rugged Black
Rugged Black Italic
I 10 to 60; italic 10 to 14

Ryerson Condensed
Li 18 to 36

Samson
Lu 24, 36, 60, 72

Sans Serif Bold
Sans Serif Bold Italic
M [330] 6 to 84; italic 6 to 72

Sans Serif Extrabold
Sans Serif Extrabold Italic
M [332] 6 to 84; italic 8 to 72

Sans Serif Extrabold Condensed
M [333] 14 to 84

Sans Serif Light *Sans Serif Light Italic*
M [329] 6 to 84; italic 6 to 72

Sans Serif Light Condensed
M [357] 14 to 72

Sans Serif Medium
M [331] 6 to 72

Sans Serif Medium Condensed
M [354] 14 to 72

Schoolbook Oldstyle
A 6 to 12

Scotch *Scotch Italic*
I 8 to 14

Scotch *Scotch Italic*
Li 6 to 30; italic 6 to 18

Scotch No. 2 *Scotch No. 2 Italic*
Li 8 to 12

Scotch Roman *Scotch Roman Italic*
A 6 to 14

Scotch Roman *Scotch Roman Italic*
M [36] 6 to 36

SHADOW
A 24 to 48; caps only [reduced]

SHADOW
I 14 and 36

Shaw Text
A 10 to 48

Slimline
M [241] 24 to 72

Spartan Black
Spartan Black Italic
A 6 to 120; italic 6 to 72

Spartan Black ***Spartan Black Italic***
Li 6 to 36

Spartan Black Condensed
Spartan Black Condensed Italic
A 10 to 120; italic 10 to 72

Spartan Black Condensed
Spartan Black Condensed Italic
Li 10 to 36; italic 10 to 24

Spartan Heavy
Spartan Heavy Italic
A 6 to 120; italic 6 to 72

Spartan Heavy ***Spartan Heavy Italic***
Li 6 to 30

Spartan Light
Li 6 to 14

Spartan Medium *Spartan Medium Italic*
A 6 to 120; italic 6 to 72

Spartan Medium *Spartan Medium Italic*
Li 6 to 30

Spike Gothic
I 36 and 42

SPIRE
M [377] 24 to 72

Square Face
M [890] 14 to 72 [reduced]

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M - Monotype

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CIrcle 6-6940

Square Gothic
Lu 4 to 48

Stationers Semiscript
A 12 to 30

Stellar Stellar Bold
Lu 8 to 72

STENCIL
A 18 to 60

BAM-STENCIL
RSW 18 to 48

LUDLOW STENCIL
Lu 36 only [reduced]

Stygian Black
Stygian Black Italic
Lu 14 to 48

Stylescript
M [425] 14 to 72

Stylus
M [351-Eng.] 14 to 36

Stymie Black
Stymie Black Italic
A 12 to 72

Stymie Bold *Stymie Bold Italic*
A 6 to 96; italic 6 to 72

Stymie Bold *Stymie Bold Italic*
M [790] 6 to 72

Stymie Bold Condensed
A 12 to 72

STYMIE BOLD OPEN
BI 24 to 48 [reduced]

Stymie Extrabold
Stymie Extrabold Italic
M [390] 6 to 72

Stymie Extrabold Condensed
M [490] 14 to 72

Stymie Light *Stymie Light Italic*
A 6 to 72; italic 6 to 48

Stymie Light *Stymie Light Italic*
M [190] 6 to 72; italic 6 to 36

Stymie Light Condensed
M [690] 12 to 72

STYMIE LIGHT TITLE
A 6, 4 sizes; 12, 5 sizes

Stymie Medium
Stymie Medium Italic
A 6 to 96; italic 6 to 48

STYMIE MEDIUM TITLE
A 6, 4 sizes; 12, 5 sizes

Stymie Medium
M [290] 6 to 72; italic 6 to 36

Stymie Medium Condensed
M [590] 14 to 72

Suburban French *Suburban French Italic*
M [172] 6 to 36; italic 6 to 12

Swing bold
M [217] 14 to 72

Tempo Black
Lu 18 to 72

Tempo Bold *Tempo Bold Italic*
Lu 6 to 72; Adv. figures to 144; italic 12 to 48

Tempo Bold Condensed
Lu 6 to 72

Tempo Heavy
Tempo Heavy Italic
Lu 6 to 72; Adv. figures to 144; italic 12 to 72

Tempo Heavy Condensed
Tempo Heavy Condensed Italic
Lu 10 to 96; italic 14 to 72

TEMPO HEAVY INLINE
Lu 18 to 48

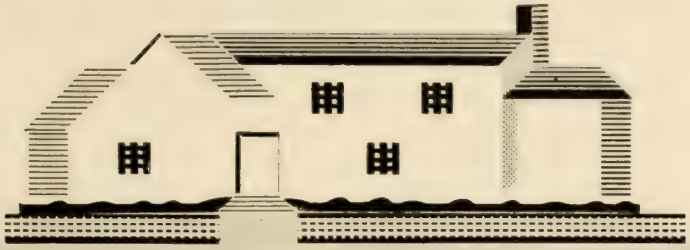
Tempo Light *Tempo Light Italic*
Tempo Light Italic
Lu 6 to 72; Adv. figures to 144; italic 10 to 72 [plain or cursive caps]

Tempo Medium *Tempo Medium Italic*
Tempo Medium Italic
Lu 6 to 72; italic 8 to 48 [plain or cursive caps]

Tempo Medium Condensed
Lu 30 to 96 [reduced]

A-American Bl-Baltimore I-Intertype Li-Linotype Lu-Ludlow M-Monotype RSW-Ruttle, Shaw & Wetherill

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Textype *Textype Italic*
Li 6 to 18

Textype Bold ***Textype Bold Italic***
Li 6 to 11

TITLE
M [28] 5½ to 12

Title No. 1
Li 6 to 18

Title No. 2
Li 18 to 24

Tourist Extra Condensed
BI 24 to 72

Tourist Gothic
M [140] 6 to 84

Tourist Gothic Italic
M [140] 14 to 72

Tower
A 12 to 72

Traflon Script
B 14 to 84

Trylon
BI 24, 36 [42, 48 caps only]

Twentieth Century Bold
M [604] 6 to 72

20th Century Bold Italic
M [604] 6 to 72

Twentieth Century Extrabold
Twentieth Century Extrabold Italic
M [603] 6 to 72

Twentieth Century Extrabold Condensed
M [607] 14 to 84

20th Century Extrabold Cond. Italic
M [607] 14 to 72

Twentieth Century Light
Twentieth Century Light Italic
M [606] 6 to 72

Twentieth Century Medium
Twentieth Century Medium Italic
M [605] 6 to 72

20th Century Medium Condensed
M [608] 14 to 72

Twentieth Century Ultrabold
Twentieth Century Ultrabold Italic
M [609] 8 to 72

Twentieth Century Ultrabold Condensed
M [610] 8 to 72

Typewriter, American
A 10

Typewriter, Bulletin
A 18, 24, 36 [reduced]

Typewriter, Elite Oliver
A 10

Typewriter, Elite Underwood
A 10

Typewriter Inland 216 Underwood
A 12

Typewriter, New Model Remington
A 10, 12

Typewriter, New Model Underwood
A 12

Typewriter No. 70
M [70] 10, 12, 24

Typewriter No. 72
M [72] 6, 8, 10, 12

Typewriter, Remington
I 10, 12

Typewriter, Remington
Li 8 to 12

Typewriter, Remington No. 2
A 12

Typewriter, Remington No. 4
Li 12

Typewriter, Reproducing
A 6, 8, 10

Typewriter, Ribbonface
A 12

Typewriter, Silk Remington
A 12

Typewriter, Standard
A 12

Typewriter, Underwood
A 12

Typewriter, Underwood
I 10, 12

A - American B - Bauer Bl - Baltimore I - Intertype Li - Linotype Lu - Ludlow M - Monotype

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Typewriter, Underwood
Li 10, 12

Typewriter, Underwood No. 2
Li 12

Typewriter, Underwood No. 4
Li 10

Typewriter, Underwood Bold
Lu 10, 12

Typo Roman
A 10, 12, 14, 1 size each; 18, 24, 2 sizes each

Typo Roman Light
I 10 to 16

Typo Roman Shaded
A 12, 14, 1 size each; 18, 24, 2 sizes each

Typo Roman Shaded
I 12 to 18

Typo Script
A 14 to 60

Typo Script Extended
A 12 to 60

Typo Shaded
A 14 to 36; 24, 2 sizes

Typo Slope
A 12 to 24

Typo Text
A 8 to 24

Typo Upright
A 12 to 30; 24, 2 sizes

Ultra-Modern [McMurtrie]
Ultra-Modern Italic [McMurtrie]
Lu 12 to 72; italic 12 to 48 [swash characters for italic]

Ultra-Modern Bold
Lu 14 to 72

UMBRA
Lu 24, 36, 48, 72; caps only [reduced]

VICTORIA ITALIC
Lu 6, 3 sizes; 12, 4 sizes; caps only

Vogue *Vogue Oblique*
I 6 to 60; oblique 6 to 24

Vogue Bold *Vogue Bold Oblique*
I 6 to 60; oblique 6 to 30

Vogue Bold Condensed
I 8 to 60

Vogue Bold Extra Condensed
I 30 to 48

Vogue Condensed
I 18 to 24

Vogue Extra Bold Condensed
I 8 to 60

Vogue Extra Bold Condensed Oblique
I 14

Vogue Extra Bold
Vogue Extra Bold Oblique
I 6 to 60; oblique 6 to 30

Vogue Medium Condensed
I 18 to 36

Vulcan Bold

Vulcan Bold Italic
Li 10 to 24

Walbaum *Walbaum Italic*
I 8 to 14

Washington Text
M [102] 6 to 36

Waverley *Waverley Italic*
I 8 to 14

Wedding Text
A 6 to 48; 18, 24, 2 sizes each

Wedding Text
M [388] 8 to 36

Weiss Roman *Weiss Italic*
B 8 to 60; italic 8 to 36

Weiss Roman *Weiss Italic*
I 8 to 18

WEISS INITIALS
B 42, 54, 66 [Series I] [reduced]

WEISS INITIALS
B 42, 54, 66 [Series II] [reduced]

WEISS INITIALS
B 42, 54, 66 [Series III] [reduced]

Weiss Roman Bold
B 8 to 72

A-American B-Bauer Bl-Baltimore I-Intertype Li-Linotype Lu-Ludlow M-Monotype

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Compiled by Herbert M. French

ADTYPE No. 163, Mono
BU: 6-8

AIRPORT BLACK, Special on Mono
BT, JU, RE, RU 14-18-24-30-36-48-60-72
CR: 14-18-24-30-36
BX: 14-18-24-30-36-48

AIRPORT BLACK CONDENSED TITLE, Special on Mono
BT, JU: 14-18-24-30-36-48-60-72
RU: 18-24 (2 sizes)-30-36-48
BX 18-24 (2 sizes)-30-36
CN: 18-24 (small)-24 (large)-30-36 42-48

AIRPORT BOLD, Special on Mono
BT, JU: 6-8-10-12-14-18-24-30-36-48-60-72
RU: 6-8-10-12-14-18 (2 sizes)-24 30-36-48-60-72

AIRPORT BOLD ITALIC, Special on Mono
BT, JU, RU: 6-8-10-12-14-18-24-30-36-48
WR: 14-18-24-30-36-48

AIRPORT BOLD CONDENSED, Special on Mono
BT, JU: 10-12-14-18-24-30-36-48-60-72
RU: 10-12-14-18 (2 sizes)-24-30-36-48-60-72
RE: 18-24-30-36-48

AIRPORT BOLD CONDENSED ITALIC, Special on Mono
BT, JU, RU: 14-18-24-30-36-48-60-72

AIRPORT DISPLAY, Special on Mono
BT, JU: 14-18-24-30-36-48-60-72

AIRPORT GOTHIC and ITALIC, Special on Mono
RU: 6-8-10-12-14-18 (2 sizes)-24-30-36-48

AIRPORT MEDIUM and ITALIC, Special on Mono
BT, JU: 6-8-10-12-14-18-24-30-36-48

AIRPORT MEDIUM CONDENSED, Special on Mono
BT, JU: 14-18-24-30-36-48-60-72

AIRPORT RELIEF, Special on Mono
BT, JU, RU: 36

AIRPORT SEMIBOLD, Special on Mono
BT, JU: 6-8-10-12-14-18-24-30-36-48-60-72
RU: 6-8-10-12-14-18 (2 sizes)-24-30-36-48-60-72

AIRPORT SEMIBOLD ITALIC, Special on Mono
BT, JU RU: 6-8-10-12-14-18-24-30-36-48

AIRPORT TOURIST, Special on Mono
RU: 14-18 (2 sizes)-24-30-36-48-60-72

AIRPORT TOURIST EXTRA CONDENSED, Special on Mono
RU: 24-30-36-48-60-72

ALDINE No. 1, Lino
BU: 7

ALTERNATE GOTHIC
(See Gothic Alternate)

ANTIQUE No. 1 with Italic, Inter
BA: 8
HU: 6-8-10-12-14
DT: 6-8-10-12-14-18 (Roman only)
AC: 6-8-10-12
PM: 8-10 (Roman only)
CL: 12
AT: 14

ANTIQUE No. 1 with Italic, Lino
CR, FS, GL, HE, MC, TH, TU: 6-8-10-12-14
PA: 6-8-10-12-14 and 18-24 (Roman only)
RU: 6-8-9-10-12-14-18
MO: 6-8-10-12-14 (Roman only)
CC, FS, HA, LE, TC: 6-8-10-12
HO: 6-8-10-12 (Roman only)
TS: 8-10-12-14
BU: 8-10-14
CS, WR: 8-10-12
CE, DE, JM: 8-10
KI: 6-8
CW, OB: 12
AT: 14
ML: 6-8-9-10-12-14 and 18-24 (Roman only)

Antique No. 1 with Century Expanded, Lino
(See reverse order)

ANTIQUE No. 1 with Old Style No, 1, Inter
(See reverse order)

ANTIQUE No. 1 with Old Style No. 1, Lino
(See reverse order)

ANTIQUE No. 2 with No. 2, Inter
(See reverse order)

ANTIQUE No. 2 with No. 2, Lino
(See reverse order)

ANTIQUE No. 2 with Old Style No. 1, Lino
(See reverse order)

ANTIQUE No. 3
CC: 6-8-10

ANTIQUE No. 3 with DeVinne, Inter
(See reverse order)

ANTIQUE No. 3 with DeVinne, Lino
(See reverse order)

ANTIQUE No. 153, Mono
BU: 9

ANTIQUE BLACK No. 1 with No. 18, Lino
(See reverse order)

ANTIQUE BLACK No. 1 with No. 28, Lino
(See reverse order)

ANTIQUE BOLD No. 144, Mono
MO: 6-8-10-12-14-18-24-30-36
BS: 24-30-36

ANTIQUE BOLD CONDENSED No. 145, Mono
MO: 6-8-10-12-14-18-24-30-36
BS: 14-18

ANTIQUE CONDENSED, Lino
BU: 18

ANTIQUE MODERN No. 26, Mono
ML: 6-7-8-9-10-11-12
MA, DT, PM: 6-8-10-12
BT: 6
MO: 8
BU: 9
SU: 6-8-10
AT: 8-10
KI: 6-9
BX: 6-8-10-12 Fig. only)
BS: 6-7-8-9-10

ANTIQUE MODERN No. 28, Mono
MA. 6-8

ANTIQUE MODERN No. 143, Mono
MA: 10-12

ANTIQUE MODERN CONDENSED No. 76, Mono
KI: 5
CO: 10
JM: 8
ML: 8-9-10

ANTIQUE SHADED No. 193, Mono
MO: 12-18-24-30-36
JU: 12-18-24-30

ARTCRAFT, Lud
WR: 12-14-18-24-30-36

ARTCRAFT ITALIC, Lud
WR: 18-24

BAM STENCIL, Caps only, Special on Mono
RU: 18-24-30-36-48

BANKERS GOTHIC, Mono
(See Gothic Bankers)

BASKERVILLE with Italic and Small Caps, Inter
TC: 6-8-9-10-11-12-14-18
AL, ML: 6-8-9-10-11-12-14
AC, PT: 8-9-10-11-12-14
AT: 6-8-9-10-11-12
CS, LE: 8-9-10-11-12
CE: 8-9-10-12
FD: 6-8-10-12
DO: 8-10-11-12-14
DA: 8-10-12-14
KN: 8-9-10-11-12-14 (Roman only)
GR: 8-10-12-14 (Roman only)

BASKERVILLE with Bold, Inter
AT: 8-10-12
ML: 10

BASKERVILLE with Italic and Small Caps, Lino
HU, TS: 7-8-9-10-11-12-14
BA, BR, BU, CC, FS, JE, JM, MA, ML, MT, PT, RE, RU, TU: 8-9-10-11-12-14
KI: 6-8-9-10-11-12-14
GL: 8-9-10-11-12-14-16
CR, OB, TU: 8-9-10-11-12-14-16 (Roman only)
CO, ET, TH: 8-10-11-12-14
LA: 8-10-11-12
BX: 8-9-10-11-12-14
AT, DT. 8-10-11
EM, MO, VO, WR: 8-9-10-11-12
BT, HO: 6-8-10-11-12
TE: 8-10-12-16, Roman only, no small caps
VO: 8-9-10-11-12 (Roman only)
CW: 8-9-10-11-12-14 and 16 (Roman only)
CN: 8-10-11-12-18-24-30-36

BASKERVILLE BOLD with Bold Italic, Lino
JM, RU: 8-9-10-11-12-14
KI: 7-8-9-10-11-12-14
ML: 10-11-12

BASKERVILLE BOLD CONDENSED, Lino
RU: 12

BASKERVILLE No. 169 Roman and Italic, Small Caps 6 to 12 pt., English
KI: 8-10-11-12
MO: 12-14-18-24 (Roman only)

BASKERVILLE No. 353 Roman and Italic, Small Caps 6 to 12 pt., Mono
MO: 6-7-8-9-10-11-12-14-18-24-36
JM: 7-8-9-10-12-14-18-24-30-36
BS, BX, MA: 8-9-10-11-12-14-18-24-30-36
ML: 6-8-9-10-11-12-14-16 (Roman only)-18-24-30-36
DT: 6-8-9-10-11-12-14 (Roman only)
FS: 6-8-9-10
BT: 6-8-10-12
AT: 8-9-(2 sizes)-9½-10 (Roman only)
BU, CC, CO, PT, RU: 14-18-24-30-36
CR: 18 and 24-30 (Roman only)
CN: 8-10-11-12 (Roman only) 18 and 24-30 (Roman only) 36

BASKERVILLE BOLD No. 453, Mono
MA: 8-9-10-11-12

BELL GOTHIC LIGHT, Lino
(See Gothic Bell-Lino)

BENEDICTINE with Italic and Small Caps, Lino
DT: 6-8-10-12-14-18 (Roman only)
MO: 6-8-10-12
CL, CW, LA, OB: 8-10-12
HO: 12-14
DA: 6-8-10-12 (18 Roman only)
MA: 6-8-10-12-14

New York City

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AD Advertising Agencies Service Co., Inc.
AL Allied Typographers, Inc.
AC Atlantic Linotype Co., Bklyn.
BA M. J. Baumwell, Typography
BX Baxter and Spencer, Inc.
BR Boro Typographers, Inc.
BU Howard O. Bullard, Inc.
CC Cooper and Cohen, Inc.
CE Central Linotypers, Inc.
CL Crescent Linotyping Corp.
CO Commanday Bros., Inc.
CR Composing Room, Inc.
CS Composition Service, Inc.
CN Consolidated Production Service, Inc.

New York City

CW Fred. A. Crowell, Inc.
DM Diamant Typographic Service, Inc.
DO Downtown Typesetter, Inc.
EM Empire State Craftsmen, Inc.
ET A. T. Edwards Typography, Inc.
FS Frederick W. Schmidt, Inc.
GL Ganer Linotype Craftsmen
HO F. Hochstadt Co.
HU Hurst Linotypers, Inc.
JE A. O. Jennings, Inc.
JU Judson Type, Inc.
KI King Typographic Service Corp.
KN Kline Linotyping Co., Inc.
LA Lafayette Linotyping, Inc.

New York City

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MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schirmer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.

BT Baltimore Type & Comp. Corp.

Boston, Mass.

GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

Buffalo, N. Y.

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TY Typographic Service, Inc.
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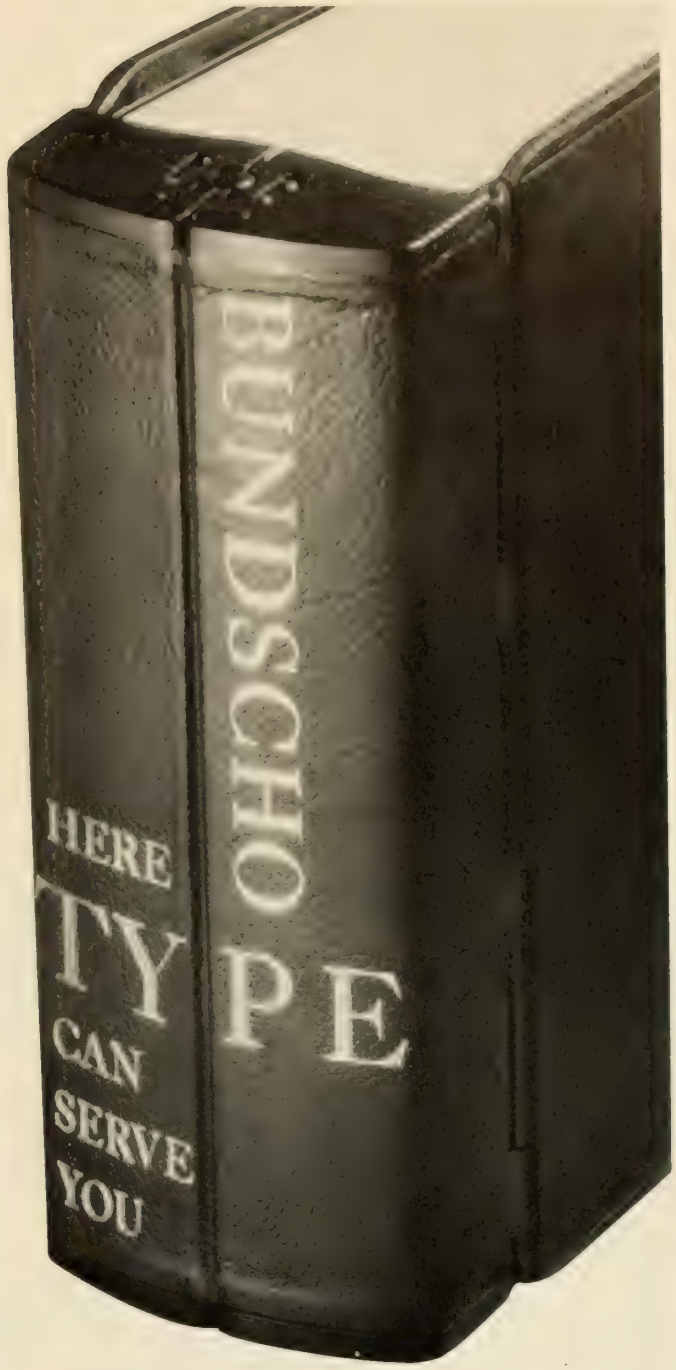
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BENEDICTINE with Benedictine Book, Lino
ML: 8-10

BENEDICTINE BOLD with Italic, Lino
DT: 8-10-12-14
RS: 8-10
WR: 8-10-12 (Roman only)-14, caps-18-24, (Roman, caps only)

BENEDICTINE BOOK with Italic and Small Caps, Lino
CE, CW, MA, SL: 6-8-10-12-14
BU, CO, LE, MO: 8-10-12-14
DT, OB: 6-8-10-12-14-18 (Roman only)
LA: 8-10-12
HO: 6-8-9-10-12-14
ML: 8-10-12-14 and 18-24-36 (Roman only)
WR: 8-10-12 (Roman only)

BERNHARD FASHION, Inter
GR: 12-14

BETON with Bold, Inter
ML: 8-10-12
CS, KI: 8-10-12-14
BU: 10
CL: 14
VO: 6-8-9-10-12

BETON BOLD ITALIC, Inter
VO: 6-8-9-10-12

BETON EXTRA BOLD, Inter
KI: 6-8-10-12-14
FD: 8-10-12-14-18-24
DO: 8-10-12-14

BETON EXTRA BOLD, Lino
MT, TU: 8-10-12-14

BETON EXTRA BOLD ITALIC, Inter
KI: 6-8-10-12-14
DO: 8-10-12-14

BETON LIGHT, Lino
TU: 8-10-12-14

BETON MEDIUM, Inter
ET: 6-8-10-12-14-18
CS, KI, MT: 8-10-12-14
CR: 8 caps-10-16-18

BETON MEDIUM with Bold, Inter
VO: 6-8-9-10-12
FD: 8-10-12-14
TH: 9-10-12-14
BU-10

BETON MEDIUM ITALIC, Inter
ET: 6-8-10-12-14
VO: 6-8-9-10-12

BETON WIDE with Extra Bold, Inter
ET, GL, KN, PT: 8-10-12-14

BINNY OLD STYLE No. 21 Roman and Italic, Small Caps 6 to 18 pt. Mono
AJ: 6-(7 Roman only)-8-10-12
AT: 5-5½-6-7-8-10-11-12-14-18-24-30-36
DT: 5-(Roman)-6-8-10-12-14-18 and 24-30-36 (Roman only)
MO: 5-6-7-8-9-10-11-12-(14-18-24-36 Roman only)
TC: 5-5½-6-8-10-12-14 (Roman)
BA: 5-6-8-10-12-14-18
KI: 4½-(Roman)-5-6-7-8-9-10-11-12
BT, CC, PT: 6-7-8-9-10-11-12
FD: 6-8-10-12-14-18
FS, JM: 5-6-7-8-9-10-11-12
BS: 5-6-7-8-9
BU, CO: 6-8-10-11-12
PM, SC: 6-8-10-12
ET: 5-6-8-10-12
ML: 4½-5-(Roman)-6-7-8-9-10-11-12-14-18 and 24-30-36 (Roman only)
TS: 5-5½-6
TU: 11
MA: 6-7-8-9-10-12
BX: 5-6-8-10-12

BINNY OLD STYLE No. 21 with Small Caps and Bold Face No. 66, Mono
BS: 5

BINNY OLD STYLE No. 21 with Gothic No. 204J and No. 66J Figures, Mono
BS: 5

BODONI with Italic, No. 204, Special on Mono
AJ: 6-8-9-10-12
BU, CO: 42-48

BODONI No. 175, Small Caps to 12 pt., Italic to 36 pt., Mono
AT, DT, ML, PT: 6-8-10-12-14-18-24-30-36
MO: 6-8-9-10-11-12 and 14-18-24-(Roman only)
KI: 6-8-9-10-11-12
ET: 14-18
TS: 9
CR: 14-18-(Italic only)-24-30 and 36-48-(Roman only)
BS, BX, BU, CO, TC, TY: 6-8-10-12
MA: 6-8-9-10-12-14-18-24-30-36
CC: 14-(Italic only)-18-24-30-36
SC: 8-10-12-(Roman only)

BODONI with Italic and Small Caps. Inter
AL, AT, DA, DO, GR, HO, HU, LA, MT: 6-8-10-12-14
PT: 6-8-10-12-14-18
AC, CL, RS: 8-10-12-14
KN: 8-10-12-14-18
MO: 14
BA: 8

BODONI with Italic and Small Caps Lino
CM: 8-10-12-14-18-(APL)-24-30-36-42-48-60-72
CC, CR, ET, MT, TC: 6-8-10-12-14-18
FS, JM: 6-8-10-12-14-18-(Roman only)
AB, BR, BU, CO, EM, MA, OB, RE, RU, TE: 6-8-10-12-14
GL: 6-7-8-10-12-14-18-24-30-36-42-48-60-72
KI, TS: 6-7-8-10-12-14-18-(Roman only)
CE: 8-10-12-14-18
DT: 6-8-10-12
CS, HO, JE, JO, LE, TH, VO: 8-10-12-14
ML: 8-10-12
WR: 8-10-12-14-(APL)-24-30-36
RS: 8-10
AT: 10-18
CW: 6-8-10-12-14 and 18-(Roman only)
CN: 6-7-8-9-10-11-12-14-18-24-30-36-42-48-60-72

BODONI, Lino
BU, CO, MC, OB: 18
TH: 6-8-10-12
BR, RE, VO: 6-8-10-12-14
DM: 8-10-12-14
TU: 6-7-8-10-12-14-18
TU: 6-7-8-10-12-14-18 (24-30-36-42-48-60-72-APL only)

BODONI, Lud
GL: 24-30-36-42-48-60-72
LE: 18-24-30-36
OB: 24-30-36-42
JM: 48-60-72
CW: 24-30-36-42-48

BODONI ITALIC, Lino
BR: 6-8-10-12-14
TH: 6-8-10-12
DM: 8-10-12-14
RU: 18
TU: 6-7-8-10-12-14-18 (24-30-36-42-48-APL only)

BODONI ITALIC, Lud
GL: 24-30-36-42-48
CW, LE, OB: 18-24-30
JM: 48
AB: 18-24-36-48

BODONI No. 375 Roman and Italic, Small Caps 6 to 12 pt., Mono
AJ: 6-8-9-10-12
AD, ET, MA, ML, MO: 6-7-8-9-10-11-12-14-18-24-30-36
BU: 8-10-12-14-18-(2 sizes, Roman)-24-30-36 and 42-48-60-72 (Roman only)
CO: 6-8-14-18-24-30-36 and 48-60-72-(Roman only)
FS, TS, TU, VP: 6-7-8-9-10-11-12
DT, JM: 6-8-10-12-14-18-24-30-36
CN: 6-7-8-9-10-11-12-14-18-24-30-36-42-48-60-72
BT, FD: 5-6-8-10-12-14-18
SA: 6-8-10-12-14
BA, KI, TY: 6-8-10-12
RU: 14-18-24-30-36
CC: 14-18-24-(Italic only)-30-36-42-48 and 60-72-(Roman only)
AT: 6-(Roman only)-8-9-10-11-12-14-18-24-30-36
SC: 8
BX: 6-8-9-10-11-12-(Roman only)-14-18-24-30-36 and 42-48-60-72 (Roman only)

BODONI No. 204 with Italic and Small Caps, Mono
BX: 42-48

BODONI BLACK, Lud
JE, RS: 14-18-24-30-36-42-48
CE: 18-24-30-36-48-60-72
CL, LA: 12-14-18-24-30-36-48
ET: 14-18-24-36-60
DE, LE, MT: 18-24-30-36-48
BR, DO: 18-24-30-36
OB: 18-24
GL: 18-24-30-36-42-48
AL:18-24-30-36-42-48-60-72
HO: 12-14-18-24-30-36-48-60-72
KN: 12-14-18-24-30-36-48-72

BODONI BLACK ITALIC, Lud
HO: 12-14-18-24-30-36-48
AL, CE, PT: 18-24-30-36-48
ET: 14-18-24-36-60
CL: 12-18-24-36
DO, MT: 18-24-30-36
KN: 14-18-24-30-36-48
GL: 18-24-30-36-42-48
LA: 18-24-36
BR: 18-24-30
MA: 10-12-16-24

BODONI BOLD and Bold Italic, Inter
AT: 18-24 and 30-36-(Roman only)

BODONI BOLD, Lino
DT: 18-24-30-36
BU, MO, OB, RU, TS: 18
BR, MA, TH: 8-10-12-14
DA: 42-48-60-72
WR: 6-8-10-12-14-18-(APL)-60-72-96-120-144
DM: 6-8-10-12-14-18-24-30
RE: 6-8-10-12-14
VO: 6-8-9-10-12
CR, MT, TU: 6-8-10-12-14-18 (24-30-36-42-48-60-72-APL only)
AB: 24-30-36-42

BODONI BOLD ITALIC, Lino
BR, MA, TH: 8-10-12-14
WR: 6-8-10-12-14-(APL)-18-24-30-36-48-60-72
DM: 6-8-10-12-14-18-24
CR, MT, TU: 6-8-10-12-14-18

BODONI BOLD with Italic, Lino
CO, MA, MT: 6-8-10-12-14-18
AB: 6-8-10-12-14
JM: 6-8-10-12-14-18-(Roman only)
TS: 6-7-8-9-10-12-14
DT, HU, JE, OB, RE, RU: 6-8-10-12-14
BR, EM, HO, LE, TH: 8-10-12-14
CE, CS: 8-10-12-14-18
MU: 8-10-12-14-18-24

BODONI BOLD with Italic and Small Caps, Inter
DA: 6-8-10-12-14-18-24-30
AL, FD, PT: 6-8-10-12-14-18
AT, CL, DO, LA, MO: 6-8-10-12-14
KI: 6-7-8-9-10-12-14
KN: 6-8-10-12-14-18-(Italic)
RS: 12
AB: 8-10-12-14-18
AC: 8-10-12-14 and 18-24-(Italic)
BA: 10-12-14
GR: 6-8-10-12-14-(Roman only)
BX: 8-10

BODONI BOLD with Italic and Small Caps, Lino
CC, CR, ET, TC: 6-8-10-12-14-18
FS: 6-(no small caps)-8-10-12-14-18-(Roman only)
GL: 6-8-10-12-14-(larger sizes in APL)
MA, MO: 6-8-10-12-14
BU, DE, ML: 8-10-12-14
HO: 8-10-12-14-18-24-30-36-48-60
VO: 8-10-12
CW: 6-8-10-12-14 and 18-(Roman only)

BODONI BOLD, Lud
GR, HU: 18-24-30-36-42-48-60-72
AB, AL, KN, LE, RS, WR: 18-24-30-36-48
AC: 18-24-36
BR, CL: 18-24-30-36
HO, LA: 18-24-30-36-48-60
DO, JE: 18-24-30-36-42
CE, DE: 24-30-36-48
TC: 24-36-48-60-72
MT: 24-30-36-48-60
OB: 24-30-36-42-48
RU: 24-30
CR: 24-30-36-48-60-72
CW, GL: 24-30-36-42-48-60-72
JM: 48-60-72

BODONI BOLD ITALIC, Lud
CR, HU: 18-24-30-36-42-48
AB, AL, GR, HO, KN, LA, LE, RS: 18-24-30-36-48
CL, DO, OB, WR: 18-24-30-36
JE: 18-24-30-36-42
CE, PT: 24-30-36-48
TC: 24-30-36
MT: 24-30-36-48-60
JM: 48-60-72
BR: 18-24-30

BODONI BOLD No. 275, Mono
AT, BS, MO: 6-7-8-9-10-11-12-14-18-24-30-36-42-48-60-72
BU, BX, CC, CO, DT, FD, ML, PM, PT, TY: 6-8-10-12-14-18-24-30-36-42-48-60-72
MA: 6-8-9-10-12-14-18-24-30-36-42-48-60-72
BT, RU: 6-8-10-12-14-18-24-36-48-60-72
ET, JM: 6-8-10-12-14-18-24 30-36
FS: 6-7-8-9-10-11-12
TS: 6-8-9-10-12
AJ, BA, KI, TC, TH: 6-8-10-12
SA, SC, VP: 8-10-12
JU: 14-18-24-30-36-48-60-72

BODONI BOLD ITALIC No. 275, Mono
BU, BX, DT, ML, PM, TY: 6-8-10-12-14-18-24-30-36-42-48-60-72
BS, BT, MO: 6-7-8-9-10-11-12-14-18-

New York City

AB Abend Typograph Co., Inc.
AD Advertising Agencies Service Co., Inc.
AL Allied Typographers, Inc.
AC Atlantic Linotype Co., Bklyn.
BA M. J. Baumwell, Typography
BX Baxter and Spencer, Inc.
BR Boro Typographers, Inc.
BU Howard O. Bullard, Inc.
CC Cooper and Cohen, Inc.
CE Central Linotypers, Inc.
CL Crescent Linotyping Corp.
CO Commanday Bros., Inc.
CR Composing Room, Inc.
CS Composition Service, Inc.
CN Consolidated Production Service, Inc.

New York City

CW Fred. A. Crowell, Inc.
DM Diamant Typographic Service, Inc.
DO Downtown Typesetter, Inc.
EM Empire State Craftsmen, Inc.
ET A. T. Edwards Typography, Inc.
FS Frederick W. Schmidt, Inc.
GL Ganer Linotype Craftsmen
HO F. Hochstadt Co.
HU Hurst Linotypers, Inc.
JE A. O. Jennings, Inc.
JU Judson Type, Inc.
KI King Typographic Service Corp.
KN Kline Linotyping Co., Inc.
LA Lafayette Linotyping, Inc.

New York City

LE Oscar Leventhal, Inc.
MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schirmer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.

BT Baltimore Type & Comp. Corp.

Boston, Mass.

GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

Buffalo, N. Y.

SA Axel E. Sahlin Typog. Service

Chicago

AT American Typesetting Corp.
BS J. M. Bundscho, Inc.
ML M & L Typesetting and Electrotyping Co.
MO Monsen-Chicago, Inc.

Cincinnati, Ohio

FD J. W. Ford Co.

Dayton, Ohio

DA Dayton's Typographic Service

Detroit, Mich.

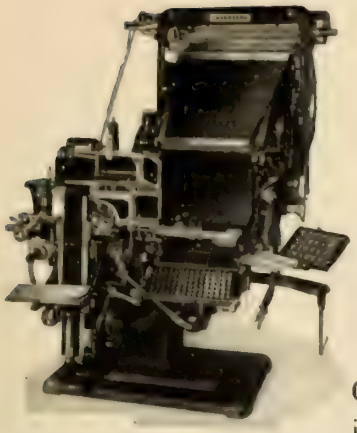
DT Detroit Typesetting Co.

Philadelphia, Pa.

AJ Alfred J. Jordan, Inc.
JM John C. Meyer & Son
RU Ruttle, Shaw & Wetherill, Inc.
TY Typographic Service, Inc.
VP Armstrong, Walter T., Inc.

Providence, R. I.

TC Typesetting Service Co.

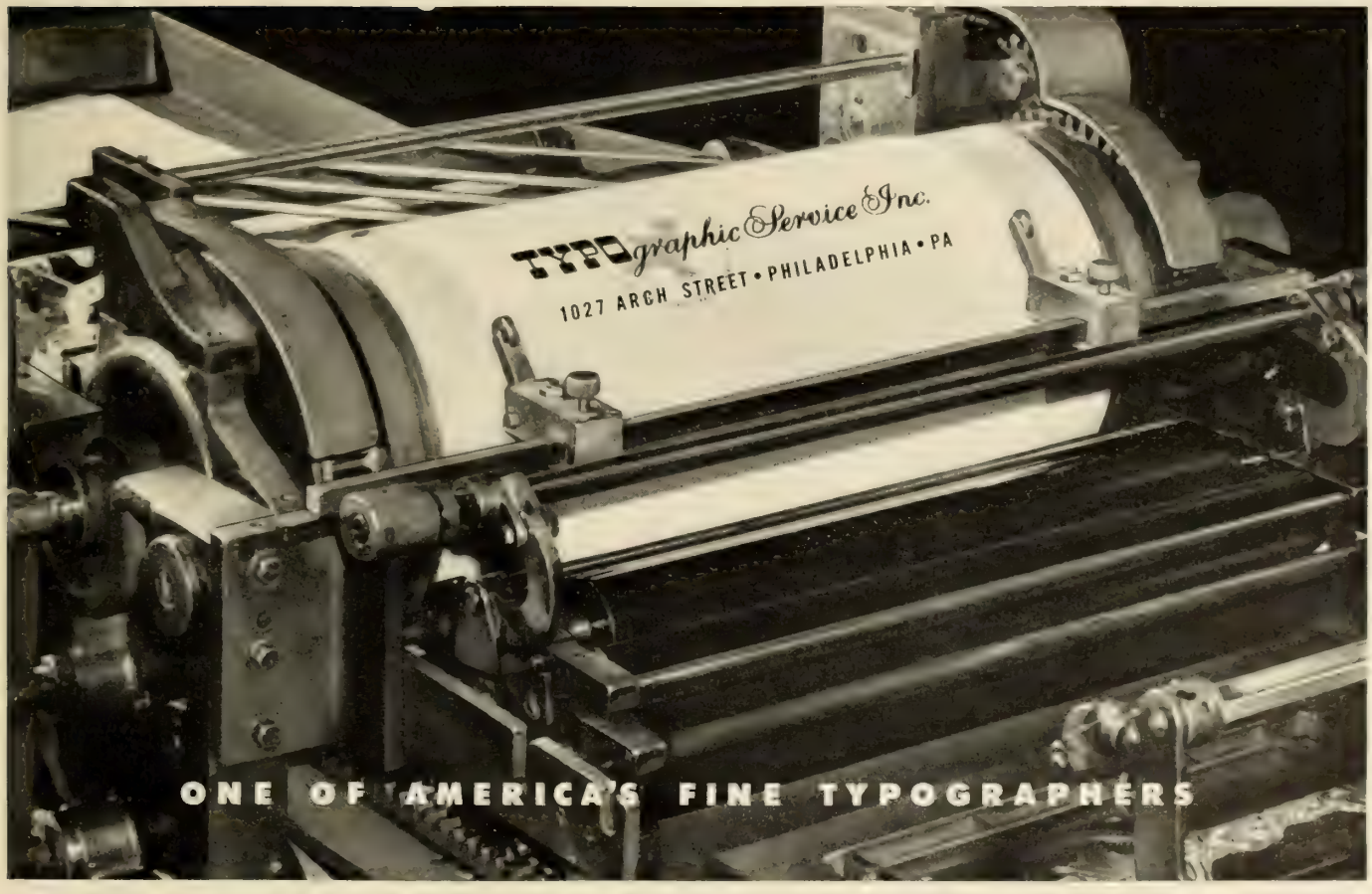


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BODONI BOLD ITALIC No. 275, Mono
24 30 36-42 48 60 72
MA: 6-8 10 12 14-18-24-30 36-48-60-72
CO: 6 8-10-12 14-18-24-30-36-48-60
AL, AT, ET, JM, PA: 6-8-10-12-14-18-24-30-36
TS: 6-7 8-9-10-11 12
AJ, BA, KI, TC: 6-8-10-12
SA, SC: 8-10-12
BT, JU: 14-18-24-30-36-48-60-72
CC: 14-18-24 30 36-42 48

BODONI BOLD CONDENSED No. 775, Mono
CN, CR, DT, JM, JU, RU, TY: 14-18-24-30-36-48-60-72
BS, CC, FD: 14-18-24-30-36-42-48-60-72
MO: 14-18-24-30-36-42-48-60-72-84
ML: 14
BU: 14-18-24-30-36-60-72
CO: 14-18-24-30-36-42-48
TC: 14-18-24-30-36-48
BX: 14-18-24-30-36-48-60-72-84

BODONI BOLD CONDENSED, Inter
WR: 24

BODONI BOLD PANELLED No. 575, Mono
WT: 14-18-24-30-36-36H4
BU, BX, CO: 18-24-30-36
RS: 18-24-30-36-42-48
JM: 30-36-36H4
ET: 36

BODONI BOLD RECUT No. 975 with Italic, Mono
TS, TU: 6-7-8-9-10-11-12
AD, MA: 6-7-8-9-10-11-12-14-18-24-30-36
VP: 6-8-9-10-11-12
TY: 6-8-10-12

BODONI BOLD SHADED No. 194, Mono
(See Bodoni Shaded Bold No. 194—Mono)

BODONI BOOK, lino
TU: 6-7-8-9-10-12-14-18
DM: 8-9-10-12
AT, BA: 18
CW: 6-8-10-12-14
ML: 18-24
VO: 10-12
CC: 8-9-10-12-14

BODONI BOOK with Italic and Small Caps, Lino
KI, TU: 6-7-8-9-10-12-14-18
TS: 6-7-8-9-10-12-14-18-(Roman only)
CO, FS, HO, HU, MT: 6-8-9-10-12-14
CR, GL: 6-8-9-10-12-14-18
EM, OB, RE: 6-8-10-12-14
TC: 6-8-10-12-14-18
BU: 6-8-9-10-12
DT, ML, RU: 6-8-10-12
ET, TH: 8-9-10-12-14
BA, BR, CS, DM, VO: 8-9-10-12
JE: 8-9-10
BX, LE, MA: 8-10-12-14
AB, CE, LA, TE: 8-10-12
PT: 8-9-14
WR: 10
RS: 12
AT: 9-12
JM: 8-9-10-12-14-18-(Roman only)

BODONI BOOK with Italic and Small Caps, Inter
PT: 6-8-9-10-12-14
AT, BT, FD, MO, MT: 6-8-10-12-14
AL: 8-9-10-12-14
AC, CL, KN, RS: 8-10-12
DA, DO, GR: 8-10-12-14
SC: 8-10-11

BODONI BOOK with Italic and Small Caps No. 875, Mono
MO: 6-7-8-9-10-11-12-14-18-24-30-36
AD, BS, ET, FS, TS, TU: 6-7-8-9-10-11-12
VP: 6-8-9-10-11-12
AJ: 8-9-10-11-12
DT, SA, TY: 8-10-12
PT: 10-11-12
MA: 8-10-12

BODONI CAMPANILE, Lud
DT: 14-18-24-30-36-42-48-60-72
AT, CL: 18-24-30-36-42-48-60-72
AL, CW, GR, HU, OB: 18-24-30-36-48-60-72
BR, DO, HO, LA, PT: 18-24-30-36-48
AB, AC: 18-24-36-48
JM: 48-60-72
KN: 14-18-24-30-36-48-72-96

BODONI CAMPANILE ITALIC, Lud
DT: 14-18-24-30-36-48
AL: 18-24-30-36-42-48
KN: 18-24-30-36-48

BODONI MEDIUM with Italic and Small Caps, Lino
HO: 8-10-12-14

BODONI MODERN, Inter
FD, LT, OB: 18

BODONI MODERN with Italic, Inter
AC, AL, BA, CO, DE, DO, MT, OB, PT: 8-10-12-14
FD: 8-10-12-14-18-24
GL: 8-10-12-14 (larger sizes in APL)

BODONI MODERN with Italic, Lino
BA, CE, MT: 8-10-12-14
BU: 8-10-12
MA: 10-12
HO: 8-10

BODONI MODERN, Lud
AL: 18-24-30-36-42-60-72
GR, HU: 18-24-30-36-48
AC: 18-24-36-48

BODONI MODERN ITALIC, Lud
GR, HU: 18-24-30-36-48
AC: 18-24-36-48

BODONI POSTER with Italic, Lino
CE: 8-10-12-14-18-24-30-36-48
GL: 8-10-12-14-18-24-30-36-42-48 (APL)
TE: 8-10-12-14 (larger sizes in APL)
BR, HU, LA, LE, RU, TU: 8-10-12-14
DT: 12-14-18-(Roman only)
MA: 8-10-12-14 and 18-24-(Roman only)
CL, HO, JE: 8-10
TS: 8-10-12
WR: 8-10-12-(APL, Roman only)-18-24-36-48-60-72-120-144
TU: (18-24-30-36-42-48-APL)

BODONI POSTER COMPRESSED, Lino
WR: 18-24-36-48-72
TE: 18-24-30-36-48-(APL)
GL 24-30-36-42-48-60-72-(APL)

BODONI SHADED BOLD No. 194, Mono
JU: 14-18-24-30-36
BT, RU: 14-18-24-30
TH: 18-24-30-36

BODONI ULTRA with Italic, Inter
AL, GR, KN: 8-10-12-14
MA: 8-10-12-14 and 18-24-(Roman only)

BODONI ULTRA with Italic, Lino
CC, CW, EM, FS, KI, LA: 8-10-12-14
BU: 8-10-12
CR: 8-10

BODONI ULTRA, Lud
LA: 12-14-18-24-30-36-48
AL: 18-24-30-36-42-48
JM: 48-60-72
CW: 18-24-48

BODONI ULTRA ITALIC, Lud
LA: 18-24-36
AB: 18-24-36-48
AL: 18-24-30-36-48
JM: 48-60-72
CW: 18-24-30-36-48

BODONI ULTRA No. 675, Mono
MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
AT, BT: 6-8-10-12-14-18-24-30-36-48-60-72
JM: 6-8-10-12-14-18-24-30-36
BX, CO, CR, DT, ML, PT: 8-10-12-14-18-24-30-36-42-48-60-72
JU, MA: 8-10-12-14-18-24-30-36-48-60-72
ET: 8-10-12-14-18-24-30-36
TE: 8-10-12-14-18-(APL)-24-30-36-48
RU: 12-14-18-24-30-36-48-60-72
BU, FD, PM: 12-14-18-24-30-36-42-48-60-72
TY: 12-14-18-24-30-36
BS: 14-18-24-30-36-48-60-72
JO: 14-18-24-30-36
CC: 8-10-12-14-18-24-30-36-42-48
CW: 30-36

BODONI ULTRA ITALIC No. 675,
MO: 6-12-14-18-24-30-36-42-48-60-72
AT: 6-8-10-12-14-18-24-30-36-42
JM: 6-8-10-12-14-18-24-30-36
CO, PT: 8-10-12-14-18-24-30-36-42-48-60-72
ML: 8-10-12-14-18-24-30-36-42-48-60
MA: 8-10-12-14-18-24-30-36
TE: 8-10-12-14
BX: 10-12-14-18-24-30-36-42-48-60-72
DT, FD, PM: 12-14-18-24-30-36-42-48-60-72
BU: 12-14-18-24-30-36-42-48
CR: 12-14-18-24-30-36-60
RU: 12-14-18-24-30-36-48
BT, ET, JU: 12-14-18-24-30-36
BS: 14-18-24-30-36-48
WR: 14-18-24-30-36
CC: 8-10-12-14-18-24-30-36-48
CW: 18-24-30-36

BOLD FACE No. 1 with No. 2, Inter
(See reverse order)

BOLD FACE No. 1 with No. 2, Lino
(See reverse order)

BOLD FACE No. 2 with Italic, Lino
DT: 5½-6-7
ET: 5½
CC: 6

BOLD FACE No. 2 with Ionic No. 5, Lino
(See reverse order)

BOLD FACE No. 2 with No. 1, Lino
(See reverse order)

BOLD FACE No. 2 with Roman, Lino
(See reverse order)

BOLD FACE No. 2 with Roman, Inter
(See reverse order)

BOLD FACE No. 2 with No. 1, Inter
(See reverse order)

BOLD FACE No. 2 with No. 2, Inter
(See reverse order)

BOLD FACE No. 2 with No. 2, Lino
(See reverse order)

BOLD FACE No. 2b with No. 2b, Lino
(See reverse order)

BOLD FACE No. 2 with Clarendon No. 1, Lino
(See reverse order)

BOLD FACE No. 2 Condensed with No. 4, Lino
(See reverse order)

BOLD FACE No. 9 with Gothic No. 31, Inter
(See reverse order)

BOLD FACE No. 9 with Gothic No. 31, Lino
(See reverse order)

BON AIR, Special on Mono
DT: 36

BOOKFACE with Italic and Small Caps, Inter
VO: 6-7-8-9-10-11-12-14
RE: 6-7-8-9-10-11
AL, ET, MT, PT: 6-8-9-10-12-14
FD: 6-8-10-12-14
LE, OB: 6-8-10

BOOKMAN with Italic and Small Caps, Lino
CC, CS, MT, TC: 6-8-9-10-12-14
BU, FS: 6-7-8-9-10-12-14
CR, EM, KI, TS, TU: 6-7-8-9-10-11-12-14
DA, DM, HU: 6-8-10-12-14
GL: 6-7-8-9-10-12
VO: 6-7-8-9-10-11-12-14-(Roman only)
DO: 6-8-10-11-12-14
TH: 6-8-9-10
CN: 6-8-9-10-11-12-14-18-24-30-36
DT: 8-9-10-12-14
MA: 8-10-12-14
BR: 6-8-9-10-11-12-14
JE: 10
AB: 12-(Italic only)
WR: 8-10-12
BX, GR: 6-8-10-12

BOOKMAN with Italic, Inter
KN: 6-8-10-12-14
CL: 6-8-10

BOOKMAN, Lud
KI: 18-20-24-30-36-42-48

BOOKMAN ENGLISH No. 161, Special on Mono
MO: 14-18-24

BOOKMAN OLD STYLE No. 98, Mono
FD: 6-8-10-12-14-18-24-30-36-42-48-60-72
ET, ML: 6-7-8-9-10-11-12-14-18-24-30-36
BU, BX, CC, JM: 6-8-9-10-12-14-18-24-30-36
DT: 6-8-10-12-14-18-24-30-36-48
BT, CO, PM, PT, RU, TC: 6-8-10-12-14-18-24-30-36
AD: 6-7-8-9-10-11-12-14-18
FS, TS, TU: 6-7-8-9-10-11-12
AJ, TH, VP: 6-8-9-10-11-12
BA, KI, LA, TY: 6-8-10-12
MA: 6-8-9-10-12-14-18-24-30-36-48-60-72
BS, MO: 6-7-8-9-10-11-12-14-18-24-36
AT: 6-7-8-(2 sizes)-10-12-14-18-24-30-36
CR: 18-24-30-36
SC: 6-8-9-10-12
CN: 6-8-9-10-11-12-14-18-20-24-30-36

BOOKMAN OLD STYLE ITALIC No. 98, Mono
AD, ML: 6-7-8-9-10-11-12-14-18-24-30-36
AJ, SC: 6-8-9-10-12
BU, MA: 6-8-9-10-12-14-18-24-30-36
BT, DT, ET, JM, PT, RU: 6-8-10-12-14-18-24-30-36
AT: 6-8-10-12-14-18
FS, TS, TU: 6-7-8-9-10-11-12
FD: 6-8-10-12-14-18-24-30
TH, VP: 6-8-9-10-11-12
BA, KI, PM, SA, TY: 6-8-10-12
MO: 6-7-8-9-10-12-14-18-24-36
BS: 6-7-8-9-10-11-12-14-18
CR: 18

New York City
- **AB** Abend Typograph Co., Inc.
- **AD** Advertising Agencies Service Co., Inc.
- **AL** Allied Typographers, Inc.
- **AC** Atlantic Linotype Co., Bklyn.
- **BA** M. J. Baumwell, Typography
- **BX** Baxter and Spencer, Inc.
- **BR** Boro Typographers, Inc.
- **BU** Howard O. Bullard, Inc.
- **CC** Cooper and Cohen, Inc.
- **CE** Central Linotypers, Inc.
- **CL** Crescent Linotyping Corp.
- **CO** Commanday Bros., Inc.
- **CR** Composing Room, Inc.
- **CS** Composition Service, Inc.
- **CN** Consolidated Production Service, Inc.

New York City
- **CW** Fred. A. Crowell, Inc.
- **DM** Diamant Typographic Service, Inc.
- **DO** Downtown Typesetter, Inc.
- **EM** Empire State Craftsmen, Inc.
- **ET** A. T. Edwards Typography, Inc.
- **FS** Frederick W. Schmidt, Inc.
- **GL** Ganer Linotype Craftsmen
- **HO** F. Hochstadt Co.
- **HU** Hurst Linotypers, Inc.
- **JE** A. O. Jennings, Inc.
- **JU** Judson Type, Inc.
- **KI** King Typographic Service Corp.
- **KN** Kline Linotyping Co., Inc.
- **LA** Lafayette Linotyping, Inc.

New York City
- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

Baltimore, Md.
- **BT** Baltimore Type & Comp. Corp.

Boston, Mass.
- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.
- **SA** Axel E. Sahlin Typog. Service

Chicago
- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

Cincinnati, Ohio
- **FD** J. W. Ford Co.

Dayton, Ohio
- **DA** Dayton's Typographic Service

Detroit, Mich.
- **DT** Detroit Typesetting Co.

Philadelphia, Pa.
- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

Providence, R. I.
- **TC** Typesetting Service Co.

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BOOKMAN OLD STYLE ITALIC NO. 98, Mono
CC 14-18 24-30-36
BX 6-8-9-10-12-14-18-24
CN: 6-8-9-10-11-12-14-18-20-24-30-36

BOOKMAN NEW No. 398 (Hess), Mono
PT: 14-18-24-30-36

BRITTANIC SCRIPT No. 351, Mono
BT, DT, JU, RU: 14-18-24-30-36
CR: 18-24

BROAD STROKE No. 322, Mono
FD: 14-18-24-30-36

BROADWAY No. 306, Mono
AT, BU, BX, CO, DT, FD, JM, MA, MO, ML, PM: 12-14-18-24-30-36
JU: 10-12-14-18-24-30-36
RU: 12-18
ET: 14-18-24-30-36

BROADWAY ENGRAVED No. 307, Mono
BT, BU, BX, CO, FD, JM, JU, MO, RU: 14-18-24-30-36

BRUCE OLD STYLE No. 31 with Italic and Small Caps, Mono
BS, KI, MA, ML, MO: 6-7-8-9-10-11-12
BU: 6-8-9-10-11-12
BX: 6-10
TS: 7-8
CO: 8-10
AT: 7-(2 sizes)-8-11
PT: 6
TY: 10
SC: 8-10-11
BT: 8-9-10-12
CC: 6-8-10-11

BULMER No. 469, Mono
TS: 11-12

CAIRO with Italic and Small Caps, Inter
AL: 6-8-10-12-14-18
AT: 6
AC, KI: 6-8-10-12-14

CAIRO with Bold, Inter
AB, AT, CO, CW, DO, FD, GR, LA, LE, MA, MT, RS: 6-8-10-12-14
KI: 6-8-9-10-12-14
AL, DA, FS, JM, KN, MT, PT, TH: 6-8-10-12-14-18
AT: 6-8-10-12
ML: 6-8-10
TC: 8-10-12-14-18
DT, OB: 8-10-12-14

CAIRO BOLD, Inter
AC: 6-8-10-12-14-18
KI: 6-8-9-10-12-14
AT: 6-8-10-12-14-18-24-30-36
CO, JM: 18
DT, FD: 18-24

CAIRO BOLD CONDENSED, Lino
MT: 8-10-12-14

CAIRO BOLD ITALIC, Inter
AT: 6-8-10-12-14
KI: 6-8-9-10-12-14

CAIRO BOLD CONDENSED with Gothic Condensed, Inter
MT, PT: 8-10-12-14

CAIRO EXTRA BOLD with Italic,
AL: 8-10-12
TC: 10-12-14

CAIRO EXTRA BOLD CONDENSED with Gothic No. 13, Inter
DA: 12-14

CAIRO MEDIUM with Italic and Small Caps, Inter
AL, JM, TC: 6-8-10-12-14-18
AT, KN: 6-8-10-12-14
ML: 6-8-10
DO: 8-10-12-14

CALEDONIA with Italic and Small Caps, Lino
DA: 6-9-11
JM: 6-7-8-9-10-11-12-14
BU, FS, GL, KI, TS, TU: 6-8-9-10-11-12-14
BR, CR, CW, DO, EM, MO, OB, RE, RU: 8-9-10-11-12-14
CS, ML: 8-9-10-11-12
BX: 8-9-10-11
DM: 8-9-10-12
LE: 8-10-11-12
TH: 9-10-11-12
JE: 10-11
MT, VO: 6-8-9-10-11-12-14-(Roman only)

CALEDONIA BOLD, Lino
TS: 16-18-24

CALEDONIA with Bold, Lino
TS: 6-8-9-10-11-12-14

CAMBRIDGE with Italic, Lino
MO: 8-10
ML: 10

CAMEO, APL
TU: 18-24-36-48

CAMEO, Lud
AL, HO: 12-14-18-24-30-36-42-48
KI: 12-14-18-24-36-48
AC: 12-18-24-36-48
AB: 12-18-24-30-36-48
CL: 12-14-18-24-36
CE, JE, KN, LE, TC: 14-18-24-30-36-48
CW, OB: 18-24-30-36-48
AB, RU: 18-24-30-36-42-48
GL: 24-30-36-48

CAMEO ITALIC, Lud
WR: 12-14-18-24-30-36-48
AL: 14-18-24-30-36-48
HO: 12-14-18-24

CARD ITALIC, Lino
WR: 18

CARTOON BOLD, Special on Mono
ML: 8-10-12-14-18-24-30-36

CASLON AMERICAN No. 637, Roman and Italic, Mono
FD: 8-10-12-14-18-24-30-36
DT: 8-10-11-12-14-18-24-30-36-42-(Roman only)-48

CASLON, Lino
CO: 18
TE: 8-10-11-12-18-(2 sizes)
TU: (24-30-36-42-48-60-72-APL only)

CASLON with Italic and Small Caps, Lino
CE: 6-8-10-11-12-14-18
CS: 6-8-10-11-12-14
DO: 6-8-10-12-14
MA: 7-8-9-10-11-12-14
BU, CO, JE, LA, LE: 8-10-11-12-14
AT: 8-10-11-12-14-18
CR: 8-10-11-12-14-18-(Roman only)
GL: 8-9-10-11-12-14-18-(APL)-24-30-36-42-48-60-72
GR, ML, OB, TS: 8-9-10-11-12-14
CC, MC: 8-10-11-12
MO: 8-10-12-14
RU: 8-10-11
PT: 8-11-12
HU: 8-10
BA: 12
TU: (24-30-36-42-48-72-APL only)
CW: 8-9-10-11-12-14 and 18-(Roman caps only)

CASLON with Italic and Small Caps,
AL, JM: 8-10-11-12-14-18-(Roman only)
FD: 8-10-12-14-18
CL, FS: 8-10-12-14
PT: 8-9-10-11-12-14
RS: 8-10-12
HO: 10
AT: 24
PM: 6-8-10
DA: 6-8-10-12
BA: 12

CASLON BOLD with Italic, Lino
TU: 5-6
DA: 6-8-10-12-14-18-24-30
TH: 6-8-10-12
MA: 8-10-12

CASLON BOLD, Lud
JE: 18-24-30-36-42
CR: 18-24-30-36
GL: 24-30-36-42

CASLON BOLD No. 79, Mono
MA, MO, PT: 5-6-7-8-9-10-11-12-14-18-24-30-36-42-48-60-72
BN, BS: 5-6-7-8-9-10-12-14-18-24-30-36-42-48-60-72
ML: 5-6-7-8-10-12-14-18-24-30-36-42-48-60-72
DT: 5-6-8-10-12-14-18-24-30-36-42-48-60-72
CR: 6-10-14-18-24-30-36
BU: 6-7-8-10-12-14-18-24-30-36-42-48-60-72
FD: 6-8-10-12-14-18-24-30-36-42-48-60-72
PM: 6-8-10-12-14-18-24-30-36
AD, ET, JM: 5-6-7-8-9-10-12-14-18-24-30-36
TU: 5-6-7-8-9-10-11-12
TS: 5-6-7-8-9-10-12
KI: 5-6-7-8-10-12
BA: 6-8-10-12-14-18
CO: 6-8-9-10-12
FS, TC, TH: 5-6-8-10-12
SU: 5-6-7-8-10-12-14-18-24-30-36
BT: 6-7-8-9-10-11-12-14-18-24-30-36
AT, TY: 5-6-8-10-12-14-18-24-30-36-42
SC, VP: 6-8-10-12
RU: 12-14-18-24-30-36
JU: 14-18-24-30-36
CC: 5-6-7-8-9-10-11-12-14-18-24-30-36-42-48
BX: 7-8-9-10-11-12-14-18-24-30-36-42-48-60-72

CASLON BOLD ITALIC No. 79, Mono
AT, ET, FD, MA, MO, PM: 6-8-10-12-14-18-24-30-36
BS: 6-7-8-9-10-12-14-18-24-30-36-42-48-60-72
PT: 6-8-10-12-14-18-24-30-36-48-60-72
TY: 6-8-10-12-14-18-24-30-36-42
TU: 5-6-7-8-9-10-11-12
TS: 6-7-8-9-10-12
CO, FS, KI, SC: 6-8-10-12
DT, ML: 6-8-10-12-14-18-24-30-36-42-48-60-72
AD: 5-6-7-8-9-10-12-14-18-24-30-36
BU: 6-7-8-10-12-14-18-24-30-36-42-48-60-72
BT: 6-7-8-9-10-11-12-14-18-24-30-36
CR, JM: 8-14-18-24-30-36
RU: 12-14-18-24-30-36
CC: 14-18-24-30-36
BX: 8-10-12-14-18-24-30-36-42-48-60-72

CASLON BOLD CONDENSED, Lud
RS: 18-24-30-36-42-48
WR: 18-24-30-36-42

CASLON CONDENSED No. 113, Mono
JM, PT: 14-18-24-30-36
AT, ML, MO: 6-8-10-12-14-18-24-30-36
KI: 8
BX: 10-12
TY: 24-(caps only)

CASLON LIGHT, Lud
JE, WR: 18-24-30-36-42
JM: 48-60-72

CASLON LIGHT ITALIC, Lud
OB: 8-9-10-11-12-14
JE: 18-24-30-36
HO: 60-72
WR: 18-24-30-36-42-48

CASLON LIGHT ITALIC with Swash, Lud
JM: 48-60-72

CASLON No. 1 with Italic and Small Caps, Lino
MA: 8-10-11-12

CASLON No. 3, Lino
VO: 6-8-10
ML: 18-24
AC: 8
TU: 6-8-10-12-14-18

CASLON No. 3 with Italic and Small Caps, Lino
TU: 6-8-10-12-14-18
OB, TH: 6-8-10-12-14
GL: 6-8-10-12-14-18-24-30-36-42-(APL)
TS: 8-9-10-12-14
HU: 8-10-12-14-18
AL, ET, FS: 8-10-12-14
CS: 8-10-12
VO: 6-8-10
AC: 8
DT: 14
ML: 10-14
TE: 6-(Roman only)-8-10-(11 Italic only)-12
BU: 10-12-14

CASLON No. 3 with Italic and Small Caps, Inter
KI: 5-6-7-8-9-10-12-14
FD: 6-8-10-12-14
CR, JM, RS: 8-10-12-14
PT: 8-9-10-12-14

CASLON BOLD No. 3 with Italic and Small Caps, Lino
MT: 8-9-10-12-14

CASLON No. 4, Lino
BU, GL: 18

CASLON No. 137 with Italic, Lino
EM, KI: 7-8-9-10-11-12
CR, VP: 8-9-10-11-12
BT: 6-8-10-12
ML, TU: 6-8-9-10-11-12
ET: 6-8-10-12-14-18-24-30-36
BU: 8-10-11-12
DM: 8-10-12
VO: 7-8-9-10-11-12-(Roman only)

CASLON NEW No. 537 Roman and Italic, Mono
TS: 6-8-9-10-12
TU: 6-8-9-10-11-12
AD: 6-8-9-10-12-14-18-24-30-36
BS: 6-8-10-12-14-18-24-30-36
VP: 9-10-(Roman only)
TY: 10
ML: 14-18-24-30-36
ET: 10-12-(Roman only)-14-18-24-30-36

CASLON NEW with Italic, Lino
TU: 7

CASLON OLD FACE with Italic and Small Caps, Inter
PT: 10

CASLON OLD FACE with Italic and Small Caps, Lino
TU: 6-8-9-10-11-12-14-18-21
ET: 8-9-10-11-12-14-18-21
GL: 6-8-9-10-11-12-14-18-21-24-30
AL: 6-8-9-10-11-12-14
MA: 8-9-10-11-11½-12-14-18-21

New York City
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- **KN** Kline Linotyping Co., Inc.
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New York City
- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

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- **BT** Baltimore Type & Comp. Corp.

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- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.
- **SA** Axel E. Sahlin Typog. Service

Chicago
- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

Cincinnati, Ohio
- **FD** J. W. Ford Co.

Dayton, Ohio
- **DA** Dayton's Typographic Service

Detroit, Mich.
- **DT** Detroit Typesetting Co.

Philadelphia, Pa.
- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

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RU: 9-10-11-11½-12-14-18
HU, OB: 8-9-10-11-12-14
PT: 9-10-11-12-14
CO: 9-10-11-12
CS, DO: 8-10-11-12-14
BR, CR, EM, TC,: 8-10-12-14-18
HO: 8-10-12-14
MC: 12
AC: 8
OB: 18
TE: 24-(Roman only)
MA: 8-9-10-12
MT: 10
CC: 9-10-11-12-14-18
CW: 8-9-10-11-12-14-18

CASLON OLD FACE HEAVY, Lud
KI: 36-48
CW, OB: 18-24-30-36-48

CASLON OLD FACE HEAVY ITALIC, Lud
CW, OB: 18-24-30-36-48

CASLON OLD FACE, No. 128, Roman and Italic, Mono
AT: 14-18

CASLON OLD ROMAN No. 78, Mono
ML: 6-8-10
KI: 8-10-12

CASLON OLD STYLE No. 337, Roman and Italic Small Caps 6 to 12 pt., Mono
BS, MA: 7-8-9-10-11-12-14-18-22-24-30-36-42-48-60-72
PT: 7-8-9-10-11-12-14-18-24-30-36-42-48-60-72
ET, JM: 6-7-8-9-10-11-12-14-18-24-30-36
DT: 7-8-10-12-14-18-22-(Roman only)-24-30-36-42-48-60-72
CO: 7-8-9-10-11-12 and 14-18-24-30-36-(Italic only)
BU, ML, MO: 7-8-9-10-11-12-14-18-24-30-36
AD: 8-9-10-11-12-14-18-24-30-36
SA: 6-8-10-11-12-14-18-24-30-36-48-60-72
PM: 7-8-9-11-14-18-24-30-36
TS: 8-9-10-11-12-14
AT: 7-8-9-10-11-12-14-18-24-36 and 42-48-(Roman only)
BT, KI, VP: 7-8-9-10-11-12
FS: 8-10-11-12
JU: 18-24-30-36-48-60-72-(Italic only)
TU: 6-8-9-10-11-12
BX: 7-8-9-10-11-12-14-18-24-30-36-42-48-60-72
CC: 7-8-9-10-11-12-(Roman only)-14-18-24-30-36-42-48 and 60-72-(Roman only)

CASLON OLD STYLE No. 471, Italic and Small Caps, with Long Descenders, Mono
KI: 7-8-9-10-11-12-16

CASLON No. 540 with Italic and Small Caps, Mono
KI: 6-7-8-9-10-11-12-14

CASLON No. 540 with Italic and Small Caps, Lino
TU: 8-9-10-11-12-14-18

CASLON OLD STYLE No. 337, Small Caps, Mono
DT: 22
BX: 14-18-24
MA: 6-7-8-9-10-11-12-14-18-22-24-30-36-42-48-60-72

CASLON OLD STYLE No. 337, Italic and Small Caps, with Long Descenders, Mono
KI: 7-8-9-10-11-12

CASLON OLD STYLE ITALIC Swash No. 337, Mono
PM: 11-14-18-24-30-36
AT, CO, JM, MA: 14-18-22-24-30-36
DT, JU, PT: 14-18-24-30-36-48-60-72
BX, CC: 14-18-24-30-36

CASLON OLD STYLE with Italic and Small Caps, Inter
KN: 8-10-12-14-18
MO: 8-10-12-14

CASLON OLD STYLE with Italic and Small Caps, Lino
MT, OB: 8-9-10-11-12-14
TH: 8-9-10-12-14
TC: 8-10-12-14-18
RU: 11-12-14
ML: 18-(Roman only)
WR: 6-7-8-9-10-11-12-14-(APL)-48-and 60-72-(Roman only)

CASLON OLD STYLE No. 437, Mono
BS, BU, BX, ML: 42-48-60-72
JU: 48-60-72
CO: 42-48
MO: 6-8-10-12-14-18-24-30-36-42-48-60-72

CASLON OLD STYLE ITALIC No. 437, Mono
BX: 42-48-60-72
BU, CO: 42-48
ML: 48-60-72
MO: 6-8-10-12-14-18-24-30-36-42-48-60-72

CASLON OLD STYLE ITALIC Swash No. 437, Mono
MO: 42-48-60-72

CASLON OLD STYLE ENGLISH No. 37, Roman and Italic (Small Caps 6 to 12 pt.), Mono
PM: 6-8-10-12-(Roman only)-14-18-24-30-36
PT: 6-8-9-10-11-12-14-18-24-30-36
AT: 6-8-10-12-14-18-24-30-36
DT: 6-8-10-12 and 14-18-(Roman only)
CO: 6-8-10-12-14-18
BS: 6-14-18-24-30-36
AD, BT, BX, ET: 14-18-24-30-36
RU: 18-24-30-36
BU: 12
JM: 8-11-14-18-24-30-36
ML: 14-18 and 24-30-36-(Roman only)
KI, MA: 6-8-10-12
MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
SC: 6-8-12-(Roman only)

CASLON OLD STYLE ENGLISH ITALIC Swash No. 37, Mono
ML: 14-18-24-30-36
CC, PT: 14-18-24
FD: 42-48-60-72

CASLON OLD STYLE INLAND No. 137, Roman and Italic (Small Caps 6 to 12 pt.), Mono
PT: 6-8-9-10-12-14-18-24-30-36
AJ, AT, KI, ML, MO, TS, VP: 6-8-9-10-11-12
TC: 8-10-12-14-18-24-30-36
ET, PM, TY: 6-8-10-12
AD: 6-7-8-9-10-11-12
FS: 6-8-9-10-11
BU: 8-10-11-12
FD: 42-48-60-72
MA: 8-10-12
JU: 12-(Roman only)-14-18-24-30-36-42-48-60-72
CC: 8-9-10-11-12-(Roman only)-14-18-24-30-36
SC: 8-9-10-11

CASLON OPEN FACE, Special on Mono
RU: 18-24-30-36-42-48
CW: 18-24-30-36-48

CASLON SPECIAL with Italic and Small Caps, Lino
WR: 12

CASLON TEXT, Lino
CW, DA: 10
BU, CO, ML: 12
DE, LT: 10-12

CASLON TRUE CUT, Lud
HO: 18-24-30-36-42-48-60-72
KI: 18-24-30-36-42
KN: 18-22-24-30-36-48
CL, RS: 18-24-30-36-48
GR: 18-22-24-30-36-42-48
WR: 18-22-24-30-36
OB: 22-24-30-36-42-48
AL: 24-30-36-42-48
TC: 24-30-36-48
CR, GL: 24-30-36-42-48-60-72

CASLON TRUE CUT ITALIC, Lud
HO: 18-24-30-36-42-48-60-72
AL, CR, KI: 18-24-30-36-42-48
CL, RS: 18-24-36
KN: 18-24-30-36-48
WR: 18-22-24-30-36-48
OB: 22-24-30-36-42-48
TC: 24-30-36-48
GL: 24-30-36-42-48-60-72
GR: 18-22-24-30-36-42-48
CW: 18-24-30-36-42

CENTAUR No. 252, Mono
ML: 14-16-24-30-36-42

CENTAUR ITALIC No. 252, Mono
ML: 16

CENTURY, Inter
CL: 8-10-14

CENTURY with Italic, Inter
AT: 6-8-9-10-12
MT: 6-8-10
PT: 8-10

CENTURY, Lino
VO: 4
LE, MA, TH: 6-8-10-12-14
ML: 18
CR: 8-10
WR: 8-10-12
BR: 6-8-9-10-11
CW: 4-6-8-9-10-12-14

CENTURY No. 2, Lino
VO: 5½

CENTURY No. 20 with Italic, Mono
MA: 6-8-9-10-11-12

CENTURY LIGHT with Italic and Small Caps, Lino
EM: 6-8-9-10-11-12
CS: 6-8-9-10
HU: 6-8-10
LA: 6
JM: 8
BR: 6-8-9-10-11

CENTURY BOLD, Inter
PM: 6-8-10-14
AC: 6-8-10
CL: 8-10-14-18

CENTURY with Bold, Inter
AT: 6-8-10-12-14

CENTURY with Cheltenham Bold, Lino
GR: 8

CENTURY BOLD with Bold Italic, Inter
KI: 6-8-10-12-14
AT: 8-10-12-14-18-24-36-(Roman only)

CENTURY ITALIC, Lino
MA, TH: 6-8-10-12-14
CR: 8
WR: 10
LE, MT: 8-10
BR: 6-8-9-10-11

CENTURY with Italics and Small Caps, Lino
GR: 6-8-10-12-14
AB: 10-12-(Italic only)
LE, MA: 6-8-10-12-14-18
CC: 6-8-10-12
HO, TU: 6-8-10-12-14
DT: 8-10-12
WR: 8-11
ML: 18-24-30-36
BR: 8

CENTURY with Bold, Lino
GR: 6
BR, OB: 8
MT, PT, TE: 6-8-10
AB, JM, LA: 6-8-10-12
DO, MA: 6-8-10-12-14

CENTURY BOLD with Bold Italic, Lino
HU, TS: 8
HO: 10
RU: 14
CR, GL, TU: 8-10-12-14
BT, ML, TH: 8-10-12
AT: 14-18-24
FS: 18

CENTURY BOLD No. 118, Mono
BX: 6-8-10-12-18
AT, CO, ML, MO: 6-8-10-12-14-18-24-30-36
AD, BA, BS, BT, CN, DT, KI, PM, PT: 6-8-10-12
BU: 6-8-9-10-11
MA: 6-7-8-9-10-11-12
ET: 10-12
SC: 6-8-10
CN: 8-10-12-14-18-24-30-36-42-48

CENTURY BOLD ITALIC No. 118, Mono
AT, ML, MO: 6-8-10-12-14-18-24-30-36
AD, BS, CC, KI, PT: 6-8-10-12
BU: 6-8-9-10-11
MA: 6-7-8-9-10-11-12
CN: 8-10-12-14-18-24-30
ET: 12
BX: 8-10-12
SC: 6-8-10

CENTURY BOLD with Century Expanded, Inter & Lino
(See reverse order)

CENTURY BOLD with Classic, Lino
BU: 10

CENTURY BOLD with No. 16, Lino
(See reverse order)

CENTURY BOLD CONDENSED, Lino
MA: 18-24

CENTURY BOLD EXPANDED, Inter
RS: 18

CENTURY CATALOGUE, Mono
CN: 8-10-(caps)-8-(small caps)

CENTURY EXPANDED, Inter
MO, RS: 18

CENTURY EXPANDED, Lino
AB: 14
BR: 6-8-9-10-11
CC: 6-8-9-10-12
AT, MO: 18
VO: 6-7-8-9
TU: 5-6-7-8-9-10-12-14

CENTURY EXPANDED with Italic and Small Caps, Inter
FS: 6-8-9-10-12-14
BU, MO: 6-8-10-12
PM: 6-8-10-14-(Roman only)
AL, OB: 8-9-10
AT: 8-10-12
RS: 8-10

New York City

AB Abend Typograph Co., Inc.
AD Advertising Agencies Service Co., Inc.
AL Allied Typographers, Inc.
AC Atlantic Linotype Co., Bklyn.
BA M. J. Baumwell, Typography
BX Baxter and Spencer, Inc.
BR Boro Typographers, Inc.
BU Howard O. Bullard, Inc.
CC Cooper and Cohen, Inc.
CE Central Linotypers, Inc.
CL Crescent Linotyping Corp.
CO Commanday Bros., Inc.
CR Composing Room, Inc.
CS Composition Service, Inc.
CN Consolidated Production Service, Inc.

New York City

CW Fred. A. Crowell, Inc.
DM Diamant Typographic Service, Inc.
DO Downtown Typesetter, Inc.
EM Empire State Craftsmen, Inc.
ET A. T. Edwards Typography, Inc.
FS Frederick W. Schmidt, Inc.
GL Ganer Linotype Craftsmen
HO F. Hochstadt Co.
HU Hurst Linotypers, Inc.
JE A. O. Jennings, Inc.
JU Judson Type, Inc.
KI King Typographic Service Corp.
KN Kline Linotyping Co., Inc.
LA Lafayette Linotyping, Inc.

New York City

LE Oscar Leventhal, Inc.
MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schirmer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.

BT Baltimore Type & Comp. Corp.

Boston, Mass.

GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

Buffalo, N. Y.

SA Axel E. Sahlin Typog. Service

Chicago

AT American Typesetting Corp.
BS J. M. Bundscho, Inc.
ML M & L Typesetting and Electrotyping Co.
MO Monsen-Chicago, Inc.

Cincinnati, Ohio

FD J. W. Ford Co.

Dayton, Ohio

DA Dayton's Typographic Service

Detroit, Mich.

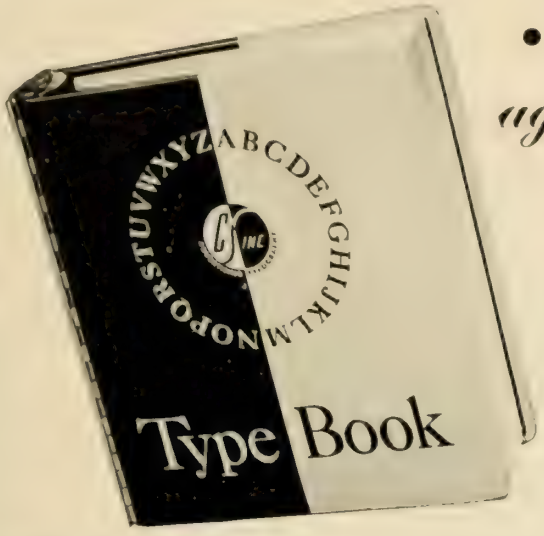
DT Detroit Typesetting Co.

Philadelphia, Pa.

AJ Alfred J. Jordan, Inc.
JM John C. Meyer & Son
RU Ruttle, Shaw & Wetherill, Inc.
TY Typographic Service, Inc.
VP Armstrong, Walter T., Inc.

Providence, R. I.

TC Typesetting Service Co.



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CENTURY EXPANDED with Italic and Small Caps, Inter
AC, FD, HU: 6-8-10
BR: 6-8-9-10-11
CN: 4-14

CENTURY EXPANDED with Italic and Small Caps, Lino
BX: 4
TS: 4 (Roman)-6-7-8-9-10-12
KI: 5-(Roman)-6-7-8-9-10-11-12-14
TU: 5-6-7-8-9-10-12-14
VO: 5½-6-7-8-9
HO: 10
ET, GL: 6-8-9-10-12-14
JE, PT: 6-8-9-10
BU, CE, ML, MO, RU: 6-8-10-12
DT, HU: 6-8-10
BT: 6-8-10-11-12
TH: 6-8
JM: 8
DM: 7-8-10
CO, TC: 8-10-12-14
DO, LE, TE: 8-10
ML: 8-10-12
AL: 8-9-10
MC: 9-10
MA: 6-8-10-12-14

CENTURY EXPANDED with Antique No. 1, Lino
ML: 10

CENTURY EXPANDED with Century Bold, Inter
AT, MO, RD: 6-8-10-12-14
AL: 6-8-10-12
BA: 10

CENTURY EXPANDED with Century Bold, Lino
BU, CE, CO, HO, LE, MA, MO: 6-8-10-12-14
JE: 6-8-9-10-12-14
AL, DT, JM, PT: 6-8-10-12
RU: 6-8-10-14
GL, SL, TE: 6-8-10
TS: 6-7-8-10
BT: 6
ML: 8-10-12-14
BA, MU: 10

CENTURY EXPANDED with Bold Italic and Small Caps, Lino
TE: 8-10
HO: 10
BU: 12-14

CENTURY EXPANDED with Cheltenham Bold, Lino
OB: 6-8-10-12-14
ML: 6-12
MA: 8-10
BU: 14

CENTURY EXPANDED with Gothic No. 4, Inter
AL: 4

CENTURY EXPANDED with Gothic No. 16, Lino
AT, BX, HO, JM, TE, TS: 4

CENTURY EXPANDED No. 20, with Italic and Small Caps, Mono
TH: 5-6-7-8-9-10-12
AD, TU: 5-6-7-8-9-10-11-12
MO: 6-7-8-9-10-11-12-14-18-24-30-36
BU: 6-8-9-10-11
BS, FS, TS: 6-7-8-9-10-11-12
CC, PT: 6-8-9-10-11-12
DT, ET, KI: 6-8-10-12
AJ, CO: 6-8-9-10-12
ML: 6-8-9-10-11-12-14-18-24-30-36
BT: 6-8-10-11-12
PM: 12
MA: 6-7-8-(Italic only) and 9-10-11-12
SC: 6-8-9-10-11-12-(Roman and small caps only)

CENTURY OLD STYLE No. 157 Roman and Italic (Small Caps 6 to 12 pt.), Mono
BX: 6-8-9-10-14
BS, MO: 6-7-8-9-10-11-12
AT, BA, CC, KI, MA: 6-8-10-12
RE: 6-8-10
TS, TU: 6-8
ET: 6
ML: 6-7-(Roman only)-8-9-10-11-12
BU: 7-8-9-10-12
PT: 8-10-12
HA: 8-10
FS: 10
SC: 8

CENTURY SCHOOLBOOK No. 420, Mono
AD, ET, TU: 6-7-8-9-10-11-12
MO: 6-7-8-9-10-11-12-14-16-18
AT: 6-8-10-12-14-18-24-30
ML: 8-9-10-11-12-13-14-16-18
AJ: 6-8-9-10-11-12
BX: 6-8-9-10-12-14-16
SC: 8-9-10

CENTURY SCHOOLBOOK No. 420 with Italic and Small Caps, Mono
BX: 6-8-9-10-12
MO: 6-7-8-9-10-11-12-14-16-18
AD, BS, TS, TU: 6-7-8-9-10-11-12
AJ, VP: 6-8-9-10-11-12
ET, FS, ML: 8-9-10-11-12
SC, TY: 8-9-10
AT: 8-14
CN: 7-8-9-10-11-12-14-18-24-30-36-48

CENTURY SCHOOLBOOK BOLD No. 620, Mono
AT: 10-12-14
ML: 10-11-12-14-16

CHAMFER CONDENSED No. 121,
(See Gothic Chamfer—Mono)

CHELTENHAM, Inter
AT: 36

CHELTENHAM with Bold, Inter
AT: 10-12
KN: 8-10-12-14

CHELTENHAM, Lino
MA: 8-10-12-14
CO: 18

CHELTENHAM with Bold, Lino
AT: 6-8-14

CHELTENHAM with Italic and Small Caps, Lino
BU, OB, SL: 8-10-12-14
DO, JM, RU: 8-10-12
CO: 8
HO: 10-12

CHELTENHAM BOLD, Inter
AT: 24

CHELTENHAM BOLD, Lino
WR: 6-8-10-12-14-18-24-30
MA, OB: 6-8-10-12-14-18
TU: 6-8-10-12-14
LE: 8-10-12-14
AB: 8-10-12
ML: 18-24-30-36
AT, BU, CW, DT, HO, MO, RU: 18
BR: 10
CC: 6-8-10-12

CHELTENHAM BOLD ITALIC, Lino
TU: 6-8-10-12-14
WR: 10-12
JO: 12

CHELTENHAM BOLD with Bold Italic, Inter
TS: 8-10
CN: 6-8-10-12-14-18-24-30-36-42-48-60-72

CHELTENHAM BOLD with Bold Italic, Lino
BU, MA: 6-8-10-12-14
GL: 6-8-10-12-14-18
ML: 6-8-18-24
ET: 8-10-12-14
TS: 8-10
BR, RU: 10
CO, JE: 14

CHELTENHAM BOLD, Lud
CL: 6-8-10-12
WR: 14-18-24-30-36-48
LE: 18-24-30-36-48
JE: 18-24-36-42-48
RU: 24-30-36-48-60
HO: 24-36-48-60
CW, OB: 24-20-36-48
ET: 24-36-48
CE: 18-24-36
KN: 12-14-18-24-30-36-42-48-60-(caps only)

CHELTENHAM BOLD ITALIC, Lud
KI: 14-18-24-30-36-42-48-60
GL: 60
RU: 18-24-30-36

CHELTENHAM BOLD, (Advt. Figs.), Lud
HO: 96

CHELTENHAM BOLD No. 86, Mono
BX, FD, ML: 5-6-8-10-12-14-18-24-30-36-42-48-60-72
BS: 5-6-7-8-9-10-11-12-14-18-24-30-36
AJ, KI: 5-6-8-10-12
FS: 6-8-12
AT: 6-8-(2 sizes)-10-12-14-18-24-30-36-48
BU, DT, MA, MO, RE: 6-8-10-12-14-18-24-30-36-42-48-60-72
BT: 6-8-10-12-14-18-24-30-36-48-60-72
CC, JM, PM, TC: 6-8-10-12-14-18-24-30-36
TU: 6-8-10-11-12
BA, CO, ET, SC, TH, TS: 6-8-10-12
TY: 6-8-10-12-14-18-24-30-36-48
JU: 12-14-18-24-30-36-48-60-72

CHELTENHAM BOLD ITALIC No. 86, Mono
BX: 6-8-10-12-14-18-24-30-36-42-48-60-72
SU: 5-14-18-24-30-36
BS: 6-7-8-9-10-11-12-14-18-24-30-36-72
BU, FD: 6-8-10-12-14-18-24-30-36-42-48-60-72
BT, PT: 6-8-10-12-14-18-24-30-36-48-60-72
AT, JM, MA, MO, PM, TC: 6-8-10-12-14-18-24-30-36
TU: 6-8-10-11-12
AJ, KI, TH, TS: 6-8-10-12
DT, ML: 6-8-10-12-14-18-24-30-36-42-48
TY: 6-8-10-12-14-18-24-30-36-48
FS: 6-8-12
CC: 14-18-24-30-36

CHELTENHAM BOLD with Century Expanded, Lino
(See reverse order)

CHELTENHAM BOLD with Chelt. Wide, Small Caps, Lino
(See reverse order)

CHELTENHAM BOLD with Elzevir, Lino
(See reverse order)

CHELTENHAM BOLD with Gothic No. 16, Lino
(See reverse order)

CHELTENHAM BOLD with Old Style No. 1, Lino
(See reverse order)

CHELTENHAM BOLD CONDENSED, Inter
AL: 8-10-12-14-18

CHELTENHAM BOLD CONDENSED, Lino
GL, TU: 8-10-12-14-18
LA: 8-10-12-14
AB, GR: 8-10-12
ML: 8-18-24
BU: 8
CO, RU, WR: 18

CHELTENHAM BOLD CONDENSED with Italic, Lino
AL: 8-10-12-14
WR: 18
MA: 12
BU, TU: 12-14
GL: 12-14 and 24-30-(caps only)

CHELTENHAM BOLD CONDENSED with Old Style, Lino
ML: 8

CHELTENHAM BOLD CONDENSED with Chelt. Cond., Lino
(See reverse order)

CHELTENHAM BOLD CONDENSED with Gothic No. 13, Lino
(See reverse order)

CHELTENHAM BOLD CONDENSED, KI: 14-18-24-30-36-42-48-60-72
RS: 14-18-24-36
OB: 18-24-30-42
RU: 18-24-30-36-48
JE: 18-24-36-42
LE: 18-24-30
SL: 18-24-36
CE: 18-24
JO: 42-48-60
KN: 18-24-30-36-42
CW: 24-30-42

CHELTENHAM BOLD EXTENDED, Lud
RU: 12-14-18-24-30-36-42-48
WR: 14-18-24-36
JO: 18-24-30-36-42-48-60

CHELTENHAM BOLD CONDENSED No. 88, Mono
MO: 5-6-8-10-12-14-18-24-30-36-42-48-60-72
JM: 5-6-8-10-12-14-18-24-30-36
DT: 6-8-10-12-14-18-24-30-36-42-48-60-72-74-(Caps only)
MA, ML: 6-8-10-12-14-18-24-30-36-42-48-60-72
BT, FD, PT: 6-8-10-12-14-18-24-30-36-48-60-72
BS: 6-8-10-12-14-18-24-30-36-60
AT, BU, BX, CC, CO, ET: 6-8-10-12-14-18-24-30-36
KI, TU: 6-8-10-12
TY: 6-8-10-12-14-18-30-(Caps only)
FS, RU: 8-10-12
JU: 12-14-18-24-20-36-48-60-72
PM: 14-18-24-30-36
CR: 18-24-30-36-42-48-60-72

CHELTENHAM BOLD CONDENSED ITALIC No. 88, Mono
BU, MO: 6-8-10-12-14-18-24-30-36
KI: 6-8-10-12
RE: 8-10-12-14-18-24-30-36-42-48
BX: 8-10-12-14-18-24-30-36
CR: 18-24-30-36-48
CC, PT: 14-18-24-30-36

CHELTENHAM BOLD EXTENDED No. 287, Mono
DT: 6-8-10-12-14-18-24-30-36-42-48
AT, BT, ML, MO: 6-8-10-12-14-18-24-30-36
BU: 6-8-10-12-14-18-24-30
KI: 6-8-10
JM: 12-14-18-24-30-36
BX: 6

New York City
- **AB** Abend Typograph Co., Inc.
- **AD** Advertising Agencies Service Co., Inc.
- **AL** Allied Typographers, Inc.
- **AC** Atlantic Linotype Co., Bklyn.
- **BA** M. J. Baumwell, Typography
- **BX** Baxter and Spencer, Inc.
- **BR** Boro Typographers, Inc.
- **BU** Howard O. Bullard, Inc.
- **CC** Cooper and Cohen, Inc.
- **CE** Central Linotypers, Inc.
- **CL** Crescent Linotyping Corp.
- **CO** Commanday Bros., Inc.
- **CR** Composing Room, Inc.
- **CS** Composition Service, Inc.
- **CN** Consolidated Production Service, Inc.

New York City
- **CW** Fred. A. Crowell, Inc.
- **DM** Diamant Typographic Service, Inc.
- **DO** Downtown Typesetter, Inc.
- **EM** Empire State Craftsmen, Inc.
- **ET** A. T. Edwards Typography, Inc.
- **FS** Frederick W. Schmidt, Inc.
- **GL** Ganer Linotype Craftsmen
- **HO** F. Hochstadt Co.
- **HU** Hurst Linotypers, Inc.
- **JE** A. O. Jennings, Inc.
- **JU** Judson Type, Inc.
- **KI** King Typographic Service Corp.
- **KN** Kline Linotyping Co., Inc.
- **LA** Lafayette Linotyping, Inc.

New York City
- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

Baltimore, Md.
- **BT** Baltimore Type & Comp. Corp.

Boston, Mass.
- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.
- **SA** Axel E. Sahlin Typog. Service

Chicago
- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

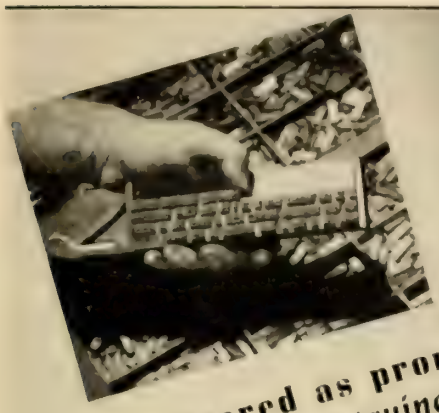
Cincinnati, Ohio
- **FD** J. W. Ford Co.

Dayton, Ohio
- **DA** Dayton's Typographic Service

Detroit, Mich.
- **DT** Detroit Typesetting Co.

Philadelphia, Pa.
- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

Providence, R. I.
- **TC** Typesetting Service Co.



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McGraw-Phillips, Inc.
typographers, printers & binders
318 WEST 39th STREET, NEW YORK 18, N. Y.

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CECIL H. WRIGHTSON, Inc.
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LINOTYPE • APL DISPLAY • LUDLOW • MONOTYPE • MAKEUP
LINO-TABLER RULE FORMS • LEADS, SLUGS, RULES • REPRODUCTION PROOF SERVICE • PLANNING AND LAYOUT DEPARTMENT

CHELTENHAM BOLD EXTRA CONDENSED, Lino
HO, WR 12-14-18-24
MA: 14
AL, GL: 24-(Caps only)
RU: 30
CW: 18

CHELTENHAM BOLD EXTRA CONDENSED, Lud
KI: 14-18-24-30-26-42-48-60
RU: 18-24-30-36-42-48
JE: 18-24-36-42
HO: 18-24-36
WR: 30-36-42

CHELTENHAM BOLD EXTRA CONDENSED No. 141, Mono
ET: 6-10-12-14-18-24-30-36
AT: 6-8-14-18
RE: 8-10-12-14-18-24-30-36-42-48-60
BT, JU: 8-10-12-14-18-24-30-36-42
ML: 6-8-10-12-14-18-24-30-36-48
MO: 12-18-24-30-36
BU, CC, CO, JM, PT: 14-18-24-30-36
DT: 14-18-24
BS: 30-36
CR: 48-60-72
BX: 10-12-14-18-24-30-36-60

CHELTENHAM BOLD OUTLINE, Lud
KI: 18-24-30-60-72
HO, WR: 18-24-30-36
AC: 18-24-36
RU: 24-30-36

CHELTENHAM BOLD OUTLINE No. 12, Mono
BT, JU: 24-30-36-(Caps only)

CHELTENHAM CONDENSED, Lino
WR: 10-12
CO: 18
RU: 24

CHELTENHAM CONDENSED with Chelt. Bold Condensed, Lino
MA: 8-10-12
BU, ML, TS: 8
DO: 10-12
RU: 14

CHELTENHAM MEDIUM No. 186, Mono
KI: 6-8-10-12
TU: 6-8-9-10-11-12
MA: 8-10-11-12
BU: 8-10-11
BS: 72

CHELTENHAM OLD STYLE, Lud
KI: 14-18-24-30-36-42-48-60-72

CHELTENHAM OLD STYLE ITALIC, Lud
RU: 18-24-30

CHELTENHAM OLD STYLE No. 64, Mono
BU, CC, MA, PT: 6-8-10-12-14-18-24-30-36
AT, BX, CO, FD, KI, PT, PM, TC: 6-8-10-12
FD: 6-8-10-12-14-18
MO: 6-8-10-12-14
ML: 6-8-10-12-18-(Caps only)
TU: 6-8-10-12
HL: 8
DT, FS, SC: 8-10-12
JM: 8-14-18-24-30-36

CHELTENHAM OLD STYLE ITALIC No. 64, Mono
BU: 6-8-10-12-14-18-24-30-36
AT, BX, CO, FD, KI, MA, ML, MO, PT, TC, TU: 6-8-10-12
DT, FS: 8-10-12
BS: 14-18-24
JM: 14-18-24-30-36
SC: 10-12

CHELTENHAM OLD STYLE CONDENSED No. 264, Mono
MO, SC: 14-18-24-30-36

CHELTENHAM OPEN FACE, Lud
(See Cheltenham Bold Outline)

CHELTENHAM WIDE, Inter
AT: 18

CHELTENHAM WIDE with Cheltenham Bold, Inter
AL: 6-8-10-12-14-18
TC: 6-8-10-12-14

CHELTENHAM WIDE, Lud
RU: 18-24-30-36

CHELTENHAM WIDE, Lino
HU, TU, WR: 6-8-10-12-14
CC: 6
CW: 8-10-12-14

CHELTENHAM WIDE with Cheltenham Bold and Small Caps, Lino
BU, CE, CO, DO, DT, GL, HO, HU, MA, ML, MO, RU, TC, TE, TH: 6-8-10-12-14
JM: 6-8-10-12-14-18
TU: 6-8-10-12-14
CL, JE: 6-8-10-12
DA, LE, OB: 8-10-12-14
LA: 8-10-12-14-18

CHELTENHAM WIDE No. 164, Mono
CC: 6-8-10-12

CHELTENHAM WIDE ITALIC No. 164, Mono
TU: 6-8-12
BX: 6-8-10-(Small caps)

CHELTONIAN BOLD, Inter
PT: 6-8-10-12
AL: 18
AT: 18-24-30-36

CHELTONIAN BOLD with Old Style No. 1, Inter
(See reverse order)

CHELTONIAN BOLD with Cheltonian Wide, Inter
(See Reverse Order)

CHELTONIAN BOLD CONDENSED, Inter
AT: 42

CHELTONIAN BOLD EXTRA CONDENSED, Inter
AT: 60

CHELTONIAN OLD STYLE with Italic and Small Caps, Inter
RS: 8-10-12

CHELTONIAN WIDE, Inter
PT: 6
AT: 18

CHELTONIAN WIDE with Cheltonian Bold, Inter
AT: 6-8-10-12-14
RS: 6-8-10-12

CLARENDON No. 1, Lino
BU: 6-8

CLARENDON No. 1 with No. 1, Lino
(See reverse order)

CLARENDON No. 1 with Bold Face No. 2 Italic, Lino
BU: 10 with 8

CLASSIC with Italic and Small Caps, BU, JE: 8

CLASSIC with Century Bold, Lino
(See Century Bold with Classic—Lino)

CLEARFACE No. 89 Roman and Italic, Mono
PM: 6-8-10-12-14-18-24-30-36
BU, MA: 6-8-10-12
ML: 8-10-12
SC: 6-8-10-12-(Roman only)

CLOISTER with Italic and Small Caps, Inter
AL: 8-10-12
AT, RS: 6-8-10-12-14

CLOISTER, Lino
BU, OB: 18
BR: 12

CLOISTER with Italic and Small Caps, Lino
BU, MA: 6-8-10-12-14
ET: 6-8-10-12-18-(Roman only)
GL, ML: 6-8-10-12-14-18
WR: 6-8-10
CE, DT: 8-10-12-14
TE, TS: 8-10-11-12-14
BR: 12

CLOISTER BLACK No. 95, Mono
AT, JM, MO, RU: 6-8-10-12-14-18-24-30-36
KI: 8-10-12
MA: 8-10-12-14-18-24-30-36-48
BT, BU, ML, PT: 8-10-12-14-18-24-30-36
FD, JU: 12-14-18-24-30-36
BX, CO, CW, DT, ET: 14-18-24-30-36
CR: 18-24-30-36

CLOISTER BOLD, Inter
KI: 6-8-10-12-14
AC: 6-8-10-12-14-18
FD: 18-24
AT: 18-36

CLOISTER BOLD with Italic, Inter
FD, HU, KI, RS: 6-8-10-12-14
JM, PT: 6-8-10-12-14-18
DO: 8-10-12-14
BX: 6-8-10-12

CLOISTER BOLD, Lino
CC, TU: 6-8-10-12-14-18
MO: 6-8-10-12-14
VO: 8-10-12
ML: 18-24-36
TS: 18-24
DT, FS, LE: 18
OB: 24
MA: 10-12-14-18-24

CLOISTER BOLD with Italic and Small Caps, Lino
CE, LE, MO: 6-8-10-12-14
AL, BC, CO, CR, ET, GL, TC, TU: 6-8-10-12-14-18
OB: 6-8-10-12-14-18-(with Swash)
JM: 6-8-10-12-14-18 (Roman only)
ML: 6-8-10-12-14-18-24
BU, TH: 6-8-10-12
RU: 8-10-12-14-18
VO: 8-10-12
DT, TS: 8-10-12-14
MA: 10-12-14
CW: 6-8-10-12-14-18 and 24-(Roman only)

CLOISTER BOLD with Italic, Lud
CL: 18-24-30-(Roman only)-36-48

CLOISTER BOLD with Bold Italic, Lino
AB: 6-8-10-12-14-18

CLOISTER BOLD No. 295, Mono
AT, BS: 6-8-10-12-14-18-24-30-36-42-48-60-72
SA: 6-8-10-12-14-18-24-30-36-48
ET: 8-10-12-14-18-24-30-36
MO: 8-10-12-14-18-24-30-36-42-48-60-72
TS: 8-10-12
KI: 10
DT, ML: 14-18-24-30-36-42-48-60-72
BU, CC, CO, FD, JM, MA, PT: 14-18-24-30-16
CR: 24-36

CLOISTER BOLD ITALIC No. 295, Mono
AT, BS, MO: 6-8-10-12-14-18-24-30-36-42-48-60-27
TS: 8-10-12
KI: 10
BU, BX, CC, CO, ET, FD, JM, MA, PT: 14-18-24-30-36
DT, ML: 14-18-24-30-36-42-48-60-72
CR: 24-36

CLOISTER BOLD SWASH No. 295, Mono
BU, CO, JM, MO: 14-18-24-30-36
ML: 14-18-24-30-36-42-48-60-72
DT: 18-24-30-36-42-48-60-72

CLOISTER BOLD with Cloister Wide, Lino
(See reverse order)

CLOISTER BOLD with Kenntonian, Inter
(See reverse order)

CLOISTER OLD STYLE with Italic and Small Caps, Inter
AT, KI: 6-8-10-12-14

CLOISTER OLD STYLE with Italic and Small Caps, Lino
AL: 8-10-12
ML: 18
TU: 6-8-10-11 (Roman only) 12-14-18

CLOISTER OLD STYLE with Italic and Swash, Lino
ML: 6-8-10-12-14

CLOISTER OLD STYLE No. 395, Mono
AT: 12-14-18-24-30-36
DT: 18
AD: 14-18-24-30-36
MA: 18-24-30-36

CLOISTER OLD STYLE ITALIC No. 395, Mono
AT: 10-12-14-18-24-30-36
AD: 14-18-24-30-36

CLOISTER TEXT, Inter
OB: 10

CLOISTER WIDE with Cloister Bold, Lino
LA: 6-14
CE: 8-10-12-14

COCHIN BOLD No. 616, Mono
JM: 6-8-10-12-14-18-24-30-36
CC, KI, MO, PT, TS: 6-8-10-12
BX: 8
ET: 8-10-12
CO: 8-10
VP: 10
JU: 12-14-18-24-30-36-48

COCHIN BOLD ITALIC No. 616, Mono
JM: 6-8-10-12-14-18-24-30-36
BX: 8
VP: 6
TS: 6-8-10-12

COCHIN OPEN No. 262, Mono
BX, BU, CO: 36

COCHIN OLD STYLE No. 61 with Italic and Small Caps, Mono
BS: 6-7-8-9-10-11-12-14-18-24-30-36
BU, BX, CO, JM, ML, MO, PT: 6-8-10-12-14-18-24-30-36
DT: 6-8-10-12-(14-18 Roman only)
KI: 6-8-9-10-12
AD, BT, FS: 6-8-10-12
VP: 6-8-10-(Roman only)
TY: 8-(Roman only)
ET: 8-10-12
CC: 6-8-10-12-(Roman only)-14-18-24-30-36

COMIQUE BOLD, Special on Mono
ML: 8-10-12-14-18-24-30-36

COMPRESSED (No. 30) No. 108, (See Stymie Bold Open No. 108—Mono)

COMSTOCK No. 202, Mono
MO: 14-18-24

New York City
- **AB** Abend Typograph Co., Inc.
- **AD** Advertising Agencies Service Co., Inc.
- **AL** Allied Typographers, Inc.
- **AC** Atlantic Linotype Co., Bklyn.
- **BA** M. J. Baumwell, Typography
- **BX** Baxter and Spencer, Inc.
- **BR** Boro Typographers, Inc.
- **BU** Howard O. Bullard, Inc.
- **CC** Cooper and Cohen, Inc.
- **CE** Central Linotypers, Inc.
- **CL** Crescent Linotyping Corp.
- **CO** Commanday Bros., Inc.
- **CR** Composing Room, Inc.
- **CS** Composition Service, Inc.
- **CN** Consolidated Production Service, Inc.

New York City
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- **DM** Diamant Typographic Service, Inc.
- **DO** Downtown Typesetter, Inc.
- **EM** Empire State Craftsmen, Inc.
- **ET** A. T. Edwards Typography, Inc.
- **FS** Frederick W. Schmidt, Inc.
- **GL** Ganer Linotype Craftsmen
- **HO** F. Hochstadt Co.
- **HU** Hurst Linotypers, Inc.
- **JE** A. O. Jennings, Inc.
- **JU** Judson Type, Inc.
- **KI** King Typographic Service Corp.
- **KN** Kline Linotyping Co., Inc.
- **LA** Lafayette Linotyping, Inc.

New York City
- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

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- **BT** Baltimore Type & Comp. Corp.

Boston, Mass.
- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.
- **SA** Axel E. Sahlin Typog. Service

Chicago
- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

Cincinnati, Ohio
- **FD** J. W. Ford Co.

Dayton, Ohio
- **DA** Dayton's Typographic Service

Detroit, Mich.
- **DT** Detroit Typesetting Co.

Philadelphia, Pa.
- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

Providence, R. I.
- **TC** Typesetting Service Co.

TYPE

THE ORIGINAL LAYOUT for this advertisement showed a heading that read: *Good type well set here*, but a peek-over-the-shoulder friend said that the proposed heading reminded him of a story he heard in London about a haberdasher who installed over his door a big sign, *Good hats for sale here.*

It seems that a "friend" of the proprietor persuaded him that he didn't need the word *here*, for where else would the hats be for sale? So the word *here* was obliterated. By successive steps, *good* and *for sale* were also eliminated, leaving only the word *hats*. Friend finally suggested that there really was no need even for *hats* with a window full to tell what was for sale within.

And so our friend, feeling much like the haberdasher's friend, argued that our demonstrations speak louder than words and that there was no necessity for using *good, well set, here*, and for that matter, even *type*.

To such overwhelming logic, we just naturally succumbed. But our typographic mind couldn't be at rest without some sort of display heading. When our friend left, we slipped that one word back—TYPE, for that's what we have here in all its ramifications, ready to go to work for you at any and all times.

DETROIT *Typesetting* COMPANY

ADVERTISING AND TRADE TYPOGRAPHY

1959 East Jefferson Avenue • FItzroy 5970 • Detroit 7, Michigan

---

Your New ACME Catalog

SHOWING DISPLAY FACES FOR IMMEDIATE DELIVERY *Is Ready!*

Bodoni Campanile and Italic • Futura Series • Radiant Series
Eden Series • Jefferson Gothic • Karnak Black Cond. Italic
Coronet Light and Bold • Onyx and Italic • Umbra • Samson
Stencil • Bon Aire • Hauser Script • Delphian • Corvinus Series
Flash and Flash Bold • Stylescript • Swing Bold • Etc.

YOUR ACME DEALER HAS IT

Write or Call Your Nearest Acme Dealer

Acme Type Foundry.....Chicago, Ill.	Judson Type, Inc.....New York, N. Y.
Aiken Typesetting Co.....Cleveland, Ohio	Superior Typesetting Co.....St. Louis, Mo.
Detroit Typesetting Co.....Detroit, Mich.	Trade Press Publishing Co. Milwaukee, Wis.
Einnehmer and Taylor.....New York, N. Y.	Don Stewart Co.....San Francisco, Cal.
V. C. Gonzales Jimenez.....Havana, Cuba	A. E. Heinsohn.....Denver, Colorado

Various districts are still available to responsible representatives. Apply by letter stating qualifications. Your territory may be open.



ACME DETROIT *type founders*
1959 E. JEFFERSON AVE. • DETROIT 7, MICH.

COMSTOCK CONDENSED No. 203, Mono
MO: 12-18-24

CONTOUR (No. 1) No. 40, Mono
DT, MO: 18-24-36

CONTOUR (No. 6) No. 123, Mono
DT, MO: 18-24-36
BX: 36

COOPER No. 482 Roman and Italic, Mono
AT: 6-(Italic only)-8-10-12-14-18-24-30-36
ET: 8-10-12-14-18 and 24-30-(Roman only)

COOPER BLACK, Lud
(See Ludlow Black—Lud)

COOPER BLACK No. 282, Mono
AT: 6-8-10-12-14-18-24-30-36-48-60-72-84-96-120
MA, ML, MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
ET, JM: 6-8-10-12-14-18-24-30-36
KI: 8-10
BU, BX, FD, PM, PT: 8-10-12-14-18-24-30-36-42-48-60-72
DT: 8-10-12-14-18-24-30-36-48-60-72
CC, CO: 8-10-12-14-18-24-30-36-42-48
TY: 8-10-12-14-18-24-30-36-48
JU: 10-12-14-18-24-30-36-48
BS: 42-48-60-72
CW: 8-10-12

COOPER BLACK ITALIC No. 282, Mono
AT: 6-8-10-12-14-18-24-30-36

COOPER TOOLED No. 582, Mono
MO: 18-24-30-36-42-48-60-72

COPPERPLATE GOTHIC
(See Gothic Copperplate)

CORONA with Italic and Small Caps, Lino
TS: 7½

CORONET, Lud
DT: 18-24-30-36-42-48-60-72
CR, CW, JM, OB: 18-24-30-36-48-60-72
CL: 18-24-36-48-60-72
AL: 18-24-30-36-48-72
LE: 18-24-30-36-48
GR: 18-24-10-36-48-60
LA, WR: 18-24-36-48-72
ML: 18-24-30-36-42-48
RU: 14-18-24-30-36-42-48
AC: 14-18-24-36-48
AB: 14-18-24-36
HO, KN: 14-18-24-30-36-48-60

CORONET, Special on Mono
ML: 18-24-30-36-42-48
JU: 18-24-30-36-48

CORONET BOLD, Lud
DO, HU, LE, OB, PT: 18-24-30-36-48
RS: 18-24-30-36-42-48
CR, DT, ML: 18-24-30-36-42-48-60-72
CE, CW, GR, JM: 18-24-30-36-48-60-72
JE: 18-24-30-48
LA: 18-24-36-48-72
AT: 14-18-24-30-36-42-48-60-72
CL: 14-18-24-30-36-48-60-72
RU: 14-18-24-30-36-42-48
AB: 14-18-24-30
AC: 14-18-24-36-48
KN: 14-18-24-30-36-48-72
BR: 18-24-36-48

CORONET BOLD, Special on Mono
ML: 18-24-30-36-42-48
JU: 18-24-30-36-48

CORVINUS Nos. 235, 236, 237, Mono
(See Glamour—Mono)

CUSHING No. 25, Mono
MO: 5-6-7-8-9-10-11-12-14-18-24
ET: 5-6-7-8-9-10-11-12
MA: 6-7-8-9-10-11-12-14-18-24-30-36
KI, ML: 6-7-8-9-10-11-12
BS, BX, CC, PT: 6-7-8-9-10-12
AT: 6-7-8-9-10-(2 sizes)-12
BU: 6-7-8-10-12
BT, DT, TC: 6-8-10-12
PM: 6-8-10
CO: 6-7-8-10
JM: 6-8-9-10-11-12
SC: 8-10-11

CUSHING ITALIC No. 25, Mono
ML: 6-7-8-9-10-11-12
BS: 6-7-8-9-10-12
MA, PT, TC: 6-8-10-12
MO: 7-8-10-11-12
KI: 8-9-10-11-12
AT, ET: 8-10

DEEPDENE No. 315, Roman and Italic (Small Caps 6 to 12 pt.), Mono
BN: 6-8-10-12-14-16-18-24-30-36-42-48-60
BS, MO: 6-8-10-12-14-18-24-30-36 42-48-60
ML: 6-8-10-12-14-16-(Roman only)-18-24-30-36-42-48
MA: 6-8-10-12-14-16-18-24-30-36-48
JM: 12
BU: 14-16-18-24-30-36-48-60
CC, CO, PT: 14-16-18-24-30-36
BX: 6-8-10-12-14-16-18-24-30-36-48-60

DEEPDENE ITALIC Swash No. 315,
BU: 14-16-18-24-30-36-48-60
CC, CO: 14-16-18-24-30-36
PT: 14-18-(2 sizes)-24-30-36
ML: 14-18-24
BX: 6-8-10-12-14-16-18-24-30-36
MA: 6-8-10-12-14-16-18-24-30-46-48

DEEPDENE BOLD No. 317, Mono
DT: 10-14

DELLA ROBBIA No. 231, Mono
ML: 6-8-10-12-14-18-24-30-36
MO: 6-8-10-12-14
PT: 6-8-10-12
AT: 8
CC: 6-8-10-12-14-18-24

DELPHIAN OPEN TITLE (Caps Only), Lud
HU: 24-36-48-72
GR, JM, KN: 24-36-48-60
AL, CW, DT, LA, WR: 24-36-48
AC, HO, TC: 24-36
ET: 24
CR, CW: 36-48

DE LUXE GOTHIC, Light with Medium, Inter
WR: 6-12-(4 sizes each)

DE LUXE GOTHIC, LIGHT with MEDIUM, Lino
GR: 6-(3 sizes)

DE LUXE GOTHIC, Lud
GR: 14-18-24-30-36-42-48-60-72

DE VINNE with Italic and Small Caps, Lino
OB: 5-6-10-12
JM: 6-8-10-11
ML: 6-8-9-10-11-12
AT: 6-10-12
TE: 8-9-10-(Roman only)
CC, JE, TU: 8-10-11
WR: 8-9-10-11-12
MA: 8-10-11-12-(Roman only)
RU: 9
BU: 10-11-12
PT: 10-11
BA, CR, DE, DM, GL: 11
ET: 12
CW: 5-6-8-10-12

DE VINNE with Italic and Small Caps, Inter
BA, GL, RS, TC: 11
DO: 10
AL: 8-10-11
AT: 8-10-11-12

DE VINNE with Antique No. 3, Inter
AT: 6-8-10-11-12

DE VINNE with Antique No. 3, Lino
ML: 6-8-9-10-11-12-14
AT: 6-8-10-12
DO: 6-11
TC: 6
JE, JM, OB: 8
PT: 8-10
MO: 9
GL: 10
BU, MA: 10-12

DE VINNE with Title No. 1, Lino
ML: 8

DE VINNE CONDENSED No. 111, Mono
MA: 6-8-10-12
DT, PM: 8
ML: 10

DE VINNE No. 11, Mono
KI, TU: 6-8-10
ML, MO: 6-8-10-12
MA: 8

DE VINNE No. 11, with Italic (Small Caps 6 to 12 pt.), Mono
DT: 5
CO: 6-8-10

DE VINNE OUTLINE No. 42, Mono
PM: 6-8-10-12
KI, SC: 12

DE VINNE OUTLINE ITALIC No. 41, Mono
KI: 12

DORIC No. 1, Lino
BU: 10
JE: 11

DORIC No. 2, Inter
DO: 11

DORIC No. 6 with No. 15, Lino
(See reverse order)

DORIC with No. 26, Inter
(See reverse order)

EDEN, Lud
GR: 12-14-18-24-30-36-48

EDEN BOLD, Lud
AT, DT: 12-14-18-24-30-36-42-48-60-72
AL: 12-14-18-24-30-36-48-72
AB, AC: 12-14-18-24-36
TC: 12-14-18-24-36-48
CR: 14-18-24-30-36-42-48-60-72
CW, JM, OB: 14-18-24-30-36-48-60-72
CL, GR, LE, MT, PT: 14-18-24-30-36-48
HU: 12-14-18-24-30-36-48-60
CL: 18-24-30-36-42-48-60-72
ET: 18-24-30-36
WR: 18-24-36-48-72
LA: 18-24-30-36-48
JE, ML, RU: 14-18-24-30-36-42-48
KN: 10-12-14-18-24-30-36-48-60
HO: 10-12-14-18-24-36-48

EDEN BOLD, Special on Mono
JU: 14-18-24-30-36-48
ML: 14-18-24-30-36-42-48

EDEN LIGHT, Lud
DT: 12-14-18-24-30-36-42-48-60-72
AL: 12-14-18-24-30-36
AC: 12-14-18-24-36
AB: 12-14-18-24
HO: 10-12-14-18-24-36-48
AT, CR: 14-18-24-30-36-42-48-60-72
CW, JM, OB, PT: 14-18-24-30-36-48-60-72
MT: 14-18-24-30-36-48
ML, RU: 14-18-24-30-36-42-48
LE: 14-18-24-30
LA: 18-24-36
WR: 18-24-36-48-72
KN: 8-10-14-18-24-30-36-48

EDEN LIGHT, Special on Mono
JU: 14-18-24-30-36-48
ML: 14-18-24-30-36-42-48

EGMONT LIGHT, Inter
GR: 10
OB: 18-24

EGMONT LIGHT with Italic and Small Caps, Inter
AL, CR: 8-10-12-14-18
BU, CC, HO, JM, KI, LA, OB: 8-10-12-14
TE: 8-10-12-14 and 18-24-(Roman only)
PT: 18-24
CW: 8-10-12-14 and 18-(Roman only)

EGMONT LIGHT and ITALIC, Mono
CC: 18-24
CW: 24

EGMONT BOLD with Italic and Small Caps, Inter
AL, MT, PT, RE: 8-10-12-14-18
CR, KI, LA: 8-10-12-14
HO: 12
RU: 12-14

EGMONT INITIALS, Inter
AL: 36

EGMONT MEDIUM, Inter
RE: 8-10-12-14-18
OB, PT: 18-24

EGMONT MEDIUM with Italic and Small Caps, Inter
KI: 6-8-9-10-12-14
MT, PT: 8-9-10-12-14-18
AL, CL, CR, RE, TC: 8-10-12-14-18
CC, CE, CO, FD, GR, JM, KN, LA, OB: 8-10-12-14
MA, WR: 8-10-12
JE: 8-10
HO: 10-12
CW: 8-10-12-14 and 18-(Roman only)

EGMONT MEDIUM SWASH, Inter
CE: 8-10-12-14
WR: 8-10-12

ELECTRA with Italic and Small Caps, Lino
MO: 6-7-8-9-10-11-12-14
KI: 7-8-9-10-11-12-14
CR, TU: 8-9-10-11-12-14
RU: 8-9-10-11-12
AT, CW, MU, OB: 8-10-11-12-14
LE, WR: 8-10-11-12
DA: 8-10-12
BU: 8-10-11
ET: 10-12
RE: 10-12-14

ELECTRA with Bold, Lino
ML: 8-10

ELECTRA with Cursive Italic, Lino
ML: 9-10-(Lower case only)

ELECTRA BOLD, Lino
KI: 8-9-10-11-12-14

ELEGANTE, Special on Mono
BT, JU: 10-12-14-18-24-30-42

ELZEVIR with Italic and Small Caps, Lino
AL: 8-10

New York City
- **AB** Abend Typograph Co., Inc.
- **AD** Advertising Agencies Service Co., Inc.
- **AL** Allied Typographers, Inc.
- **AC** Atlantic Linotype Co., Bklyn.
- **BA** M. J. Baumwell, Typography
- **BX** Baxter and Spencer, Inc.
- **BR** Boro Typographers, Inc.
- **BU** Howard O. Bullard, Inc.
- **CC** Cooper and Cohen, Inc.
- **CE** Central Linotypers, Inc.
- **CL** Crescent Linotyping Corp.
- **CO** Commanday Bros., Inc.
- **CR** Composing Room, Inc.
- **CS** Composition Service, Inc.
- **CN** Consolidated Production Service, Inc.

New York City
- **CW** Fred. A. Crowell, Inc.
- **DM** Diamant Typographic Service, Inc.
- **DO** Downtown Typesetter, Inc.
- **EM** Empire State Craftsmen, Inc.
- **ET** A. T. Edwards Typography, Inc.
- **FS** Frederick W. Schmidt, Inc.
- **GL** Ganer Linotype Craftsmen
- **HO** F. Hochstadt Co.
- **HU** Hurst Linotypers, Inc.
- **JE** A. O. Jennings, Inc.
- **JU** Judson Type, Inc.
- **KI** King Typographic Service Corp.
- **KN** Kline Linotyping Co., Inc.
- **LA** Lafayette Linotyping, Inc.

New York City
- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

Baltimore, Md.
- **BT** Baltimore Type & Comp. Corp.

Boston, Mass.
- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.
- **SA** Axel E. Sahlin Typog. Service

Chicago
- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

Cincinnati, Ohio
- **FD** J. W. Ford Co.

Dayton, Ohio
- **DA** Dayton's Typographic Service

Detroit, Mich.
- **DT** Detroit Typesetting Co.

Philadelphia, Pa.
- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

Providence, R. I.
- **TC** Typesetting Service Co.

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ELZEVIR with Cheltenham Bold, Lino
BU: 8-12

ELZEVIR No. 1 with Italic, Lino
BU: 8-10

ENGRAVERS BOLD No. 323 or 348, Mono
MO: 14-18-24
AT: 6-(3 sizes)-12-(2 sizes)
JU: 6-(4 sizes)-12-(3 sizes,-18-(2 sizes)
PM: 6-(4 sizes)

ENGRAVERS BOLD with Gothic, Lino
AB: 6-12-(4 sizes each)

ENGRAVERS BOLD, Lud
CE: 18-(2 sizes)
WR: 6-12-(2 cizes each)
CL: 6-12-(3 sizes each)
TC: 12-(4 sizes)-18
KN: 6-(4 sizes)12-(3 sizes)-18-(2 sizes)-24

ENGRAVERS OLD ENGLISH BOLD No. 188, Mono
PM: 6-8-10-12-14-18-24
DT: 8-10-12-14-18-24
FD: 14-18-24

ENGRAVERS ROMAN No. 347, Mono
PM: 6-(4 sizes)-12-(3 sizes)
MO: 6
BX, ML: 6-(4 sizes)

ENGRAVERS ROMAN No. 223, Mono
DT: 5-6-8-10-12-14-18-24
AT: 6-8-10-12-14-18-24
BT: 6-(4 sizes)-12-(3 sizes)-14-24-30

ENGRAVERS ROMAN, Lino
HO, MA: 6-12-(4 sizes each)-18-(2 sizes)
BR, JM, LA: 6-12-(4 sizes each)
CL, GR: 6-12-(3 sizes each)
OB: 6-(4 sizes)-12-(3 sizes)
CW: 6-(4 sizes)-12-(3 sizes)

ENGRAVERS ROMAN, Inter
KN: 6-(4 sizes)-12-(3 sizes)

ENGRAVERS ROMAN No. 9 with Gothic Copperplate No. 31, Lino
(See Gothic Copperplate No. 31 with Bold Face—Engravers Roman—No. 9—Lino)

ENGRAVERS TEXT, Inter
GR: 10-12-14-16

ERBAR LIGHT CONDENSED with Bold Condensed, Lino
JM: 8-(bold only)-10-12-14

ESTIENNE with Italic and Small Caps, Lino
KI, OB: 8-10 12-14
RU: 12

EUSEBIUS BOLD, Lud
CL: 18-24-30-36-48

EUSEBIUS BOLD ITALIC, Lud
CL: 18-24-36-48

EUSEBIUS OPEN, Lud
AL, GR: 18-24-36-48
WR: 24-36-48-(caps only)

EXCELSIOR with Italic and Small Caps, Lino
AL, LE: 8-9
TS: 8-9-10-11
TE: 7-8-9
GL: 5½-7-8-10
TU: 5½-7-8-9-10-11-(Roman only)

EXCELSIOR with EXCELSIOR BOLD, Lino
AT: 8-10
AL: 7-8-9

EXCELSIOR with No. 2, Lino
BT: 5
TS: 8-9-10

EXCELSIOR with Gothic No. 3, Lino
JM: 5

FAIRFIELD, Lino
CW, VO: 6-8-9-10-11-12-14
MT, RU: 8-9-10-11-12-14

FAIRFIELD with Italic and Small Caps, Lino
CR, EM, KI, OB, RE, TS: 6-8-9-10-11-12-14
JM: 7-8-9-10-11-12-14
FS, MO: 8-9-10-11-12-14
DO: 8-10-11-12-14
BU: 8-9-10-11
WR: 8-9-10-11-12
CE: 9

FARMERS OLD STYLE No. 15 Roman and Italic (Small Caps 6 to 12 pt.), Mono
BU, CC, CO, MA, PT, TU: 6-8-10-12
MO: (Roman only) 6-8-10-12
KI: 6-7-8-9-10 and 11-12-(Roman only)
DT: 6-8-10
PM: 6-8-(Roman only)
ET: 8
AT, SC: 10
ML: 8-9-(Roman only)-10

FLASH No. 373, Mono
BU, BX, CC, CR: 14-18-24-30-36-42-48-60-72
BT, CN, DT, JM, ML, MO, RU: 14-18-24-30-36-48-60-72
BU, CO: 14-18-24-30-36-42-48
TY: 14-18-24-30-36-48-60
AD: 14-18-24-30-36

FLASH BOLD No. 473, Mono
BU, RE: 14-18-24-30-36-42-48-60-72
BX, CC, DT, JA, MO: 14-18-24-30-36-48-60-72
CO: 14-18-24-30-36-42-48
CN: 18-24-42

FORUM No. 274, Mono
AD, BX, CC, CO, JM, ML, MO, PT: 12-14-18-24-30-36
BU, MA: 12-14-18-24-30-36-48
DT: 14-18-24

FOURNIER No. 185, Mono
KI: 10-12

FOURNIER No. 305, Mono
BT, BU, BX, CC, CO, FD, JM, JU, RU: 18-24-30
PT: 18-24
MA: 14-18-(with Italic)

FRENCH CADMUS No. 22 with Italic and Small Caps, Mono
KI: 6-8-9-10-11-12
BT: 6-8-10-12
ML: 10

FRENCH OLD STYLE No. 71 with Italic and Small Caps, Mono
KI: 8-10-12
MA: 10-12

FRENCH ROUND FACE No. 150 and Italic (Small Caps 6 to 12 pt.), Mono
MA: 6-8
TY: 6-(Roman only)
JM: 8
KI: 12

FUTURA, Mono
(See Twentieth Century)

FUTURA WITH OBLIQUE, Inter
AB: 8-10-12

FUTURA BOLD with Italic, Inter
TC: 6-8-10-12-14-18
VO: 6-8-9-10-12-14-(Roman only)
KI, MT: 6-8-9-10-12-14
AL, AT, DA, DO, EM, FD, GL, RE: 6-8-10-12-14
FS: 6-8-9-10-12-14-18-(Roman only)
TU: 6-8-9-10-12-14-18
BA, LE: 8-10-12-14
JM: 8-10-12-14-18-(Roman only)
CN: 6-8-9-10-11-(Italic only)-12-14-16-(Roman only)-18-24-30-36-42-60-72-84-(Roman only)

FUTURA BOLD with OBLIQUE, Inter
BA: 8-10-12-14

FUTURA BOLD CONDENSED, Inter
BR, AL, KI, OB, TU: 6-8-10-12-14
BA, CR, EM, FS, TH: 8-10-12-14
TS: 6-8-10-12
VO: 10-12-14

FUTURA BOLD CONDENSED with Medium Condensed, Inter
LE, RE: 8-10-12-14
BA: 8 with 10-10 with 12-12 with 14 and 14 with 14 pt. Medium Condensed No. 2

FUTURA BOOK with Italic, Inter
BA: 8
KI: 6-8-10-12-14
RE: 8-10-12-14

FUTURA DEMI BOLD with DEMI BOLD OBLIQUE, Inter
BA: 8-10-12-14

FUTURA DEMI BOLD with Italic, Inter
VO: 6-8-9-10-12-14-(Roman only)
FS: 6-8-9-10-12-14-18-(Roman only)
EM, KI, MT: 6-8-9-10-12-14
AT, BA, DA, GL, HU, RE: 6-8-10-12-14
AL, FD: 6-8-10-12-14-18
CS, CW, DO, HO, LE, PT: 8-10-12-14
JM: 8-10-12-14-(Roman only)
BX: 8-10-12-14-18-(One letter)
TH: 18

FUTURA DEMI BOLD with Oblique, Inter
GR: 8-10-12-14

FUTURA DEMI, Inter
CN: 6-8-9-10-11-12-14-16-18-24-30-36-42-48-60-72-84
BA: 18
TU: 6-8-9-10-12-14

FUTURA DEMI ITALIC, Inter
TU: 6-8-10-12-14
CN: 6-8-10-12-14-16-18-24-30-36

FUTURA LIGHT, Inter
TU: 6-8-9-10-12-14
BR, KI: 6-8-10-12-14
CO: 6-8-10-12
CS, ET: 8-10-12-14

FUTURA LIGHT with Italic, Inter
AL, BR, EM, RE: 6-8-10-12-14
GL, LE, TU: 8-10-12-14
KI: 6

FUTURA LIGHT with Medium, Inter
CO: 6-8-10-12
FS, TH, TS: 8-10-12-14

FUTURA MEDIUM, Inter
FS, KI: 6-8-9-10-12-14-18
FD: 6-8-10-12-14-18-24
TU, VO: 6-8-9-10-12-14
AT, BA, CL, GL, HU, RE: 6-8-10-12-14
CS, ET, LE, MT: 8-10-12-14
JM: 8-10-12-14-18
HO: 10
TH: 18
BX: 8-10-12-14-18-(one letter)
EN: 6-8-9-10-11-12-14-16-18-24-20-36-48-60-72

FUTURA MEDIUM CONDENSED, Inter
AL: 8-10-12-14-18
TS: 8-10-12-14
OB, TU: 8-10-12-14-(2 sizes)
KI: 8-10-12-14-16
BA, CR, FS, TH: 10-12-14-16
EM: 10-12-14-18
CW: 6-8-10-12-14

FUTURA MEDIUM with Oblique, Inter
BA, BX: 8-10-12-14
HO: 6-8-10-12-14

FUTURA MEDIUM OBLIQUE (Italic), Inter
FD: 6-8-10-12-14-18-24
EL, FS, KI: 6-8-9-10-12-14
AL: 6-8-10-12-14-18
AT, CL, GL, HO, HU: 6-8-10-12-14
BA, JM, LE, MT, PT: 8-10-12-14
TH: 18

FUTURA MEDIUM with Bold, Inter
JE: 6

FUTURA MEDIUM with Demibold,
BA: 6
JM: 6-8-10-12-14
HU: 10

FUTURA MEDIUM with Italic, Inter
TC: 6-8-10-12-14-18
BA, DA: 6-8-10-12-14
MT, TU: 6-8-9-10-12-14

GALLIA No. 313, Mono
MO: 14-18-24-30-36-48-60-72
BT, BU, BX, CO, DT, FD, JM, MA, ML, RU: 14-18-24-30-36
WR: 18-24-30-36
JU: 12-14-18-24-30-36

GARAMOND AMERICAN No. 648 with Italic and Small Caps, Mono
AD, BS, ET, FS, MO, TS, TU: 6-7-8-9-10-11-12
TY, VP: 6-8-9-10-11-12
TH: 6-8-9-10-12
AT: 6-8 and 10-11-12-(Roman)
CR: 18-24-30-36-42-48
SC: 7-8-9-10-11
CN: 6-7-8-9-10-12-14-16-18-24-30-36-42-48 and 60-(Roman only)

GARAMOND, Inter
DO: 6-8-10-12-14
OB: 18
CN: 6-7-8-9-10-12-14-16-18-24-30-36-42-48-60

GARAMOND ITALIC, Inter
OB: 18
AB: 6-8-10-12-14
CN: 6-7-8-9-10-12-14-16-18-24-30-36-42-48

GARAMOND OLD STYLE, Lino
VO: 6-7-8-9-10-11-12

GARAMOND with Italic and Small Caps, Inter
RE: 6-7-8-10-12-14-18-24-30-36-48
FS: 6-7-8-9-10-11-12-14-18-(Roman only)
GL, KI: 6-7-8-9-10-11-12-14-18
AL, CR: 6-8-9-10-11-12-14-18
BX, HU: 6-8-9-10-11-12-14
CS: 6-8-9-10-12-14
LA, OB: 6-8-10-11-12-14
CO, PT: 6-8-10-12-14-18
AC, BA, BU, DA, DO, FD, HO, JM, KN, MT, RS: 6-8-10-12-14
ML: 6-8-10-12
BT, JE, LE, RU: 8-10-12-14
CL: 8-10-12

GARAMOND with Italic and Small Caps, Lino
DM, MT: 6-7-8-9-10-11-12-14
VO: 6-7-8-9-10-11-12
ET: 6-8-10-12-14-18
AB, GR, JM, MA: 6-8-10-12-14
TS, TU: 6-7-8-9-10-11-12-14-18
BU, HO: 8-10-12-14
CE, TC, TH: 8-10-12-14-18
CL: 8-10-12
ML: 8-10-11-12
CN: 6-7-8-9-10-12-14-16-18-24-30-36-42-48 and 60-(Roman only)
WR: 8-10-11-12-14-(APL, Roman caps 24-30-36)

New York City

- **AB** Abend Typograph Co., Inc.
- **AD** Advertising Agencies Service Co., Inc.
- **AL** Allied Typographers, Inc.
- **AC** Atlantic Linotype Co., Bklyn.
- **BA** M. J. Baumwell, Typography
- **BX** Baxter and Spencer, Inc.
- **BR** Boro Typographers, Inc.
- **BU** Howard O. Bullard, Inc.
- **CC** Cooper and Cohen, Inc.
- **CE** Central Linotypers, Inc.
- **CL** Crescent Linotyping Corp.
- **CO** Commanday Bros., Inc.
- **CR** Composing Room, Inc.
- **CS** Composition Service, Inc.
- **CN** Consolidated Production Service Inc.

New York City

- **CW** Fred. A. Crowell, Inc.
- **DM** Diamant Typographic Service, Inc.
- **DO** Downtown Typesetter, Inc.
- **EM** Empire State Craftsmen, Inc.
- **ET** A. T. Edwards Typography, Inc.
- **FS** Frederick W. Schmidt, Inc.
- **GL** Ganer Linotype Craftsmen
- **HO** F. Hochstadt Co.
- **HU** Hurst Linotypers, Inc.
- **JE** A. O. Jennings, Inc.
- **JU** Judson Type, Inc.
- **KI** King Typographic Service Corp.
- **KN** Kline Linotyping Co., Inc.
- **LA** Lafayette Linotyping, Inc.

New York City

- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

Baltimore, Md.

- **BT** Baltimore Type & Comp. Corp.

Boston, Mass.

- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.

- **SA** Axel E. Sahlin Typog. Service

Chicago

- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

Cincinnati, Ohio

- **FD** J. W. Ford Co.

Dayton, Ohio

- **DA** Dayton's Typographic Service

Detroit, Mich.

- **DT** Detroit Typesetting Co.

Philadelphia, Pa.

- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

Providence, R. I.

- **TC** Typesetting Service Co.

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LI 2-9170

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GARAMOND with Italic and Small Caps, Lino
RU: 11-12
CC: 6-8-9-10-11-12-14-18
CW: 6-8-10-11-12-14-18

GARAMOND No. 3 with Italic, Lino
TS: 6-8-10-12-14 and APL 18-24-30-36
RE: 6-7-8-9-10-11-12-14
CR: 6-8-10-11-12-14-18
MO: 7-8-9-10-11-12-14
TC: 6-8-9-10-11-14-18
BR: 6-8-10-12-14

GARAMOND BOLD No. 3 with Italic, Lino
RE: 6-7-8-9-10-11-12-14
BR, BU: 6-8-10-12-14
DT: 8-9-10-12-14
MO: 8-10-12-14
TS: 18
TE: 18-24-30-36-48-(APL)

GARAMOND SWASH, Lino
CE: 8-10-12-14-18

GARAMOND, Lud
HO: (Caps only) 14-18-24
ET, KN: 18-24-30-36-48
AC, LA: 18-24-36
CR, CW, OB: 24-30-36-42-48
AL, CE, LE: 24-30-36-48
JM: 48-60-72
BR: 18-24-30-36

GARAMOND ITALIC, Lud
AL, ET: 18-24-30-36-48
LE: 18-24-30-36
AC, LA: 18-24-36
CR: 24-30-36-42-48
CE: 24-30-36-48
CW, OB: 24-30-36
KN: 18-24-36-48
BR: 18-24

GARAMOND SWASH, Lud
LE: 18-24-30-36
CE: 24

GARAMOND SWASH ITALIC, Lud
LA: 18-24-36
JM: 48-60-72

GARAMOND BOLD with Italic, Inter
CR, GL: 6-7-8-9-10-11-12-14-18
AL: 6-8-9-10-11-12-14
FD: 6-8-10-12-14-18-24-30
AC, CO, DA, LA, LE: 6-8-10-12-14
JM, KN, MT, PT: 6-8-10-12-14-18
CS: 6-8-9-10-12-14
ML: 6-10
OB: 8-10-12-14-18-(Roman only)
CL: 8-10-12
AB, BT, JE: 8-10-12-14

GARAMOND BOLD with Italic, Lino
GL: (APL)-24-30-36-42-48-60-72-84-96-120-144
CC: 6-8-10-12-14-18
CR: (APL)-84-96-120-144
BU: 8-10-12-14
CN: 6-8-9-10-12-14-16-18-24-30-36-42-48-60-72
TC: 8-10-12-14-18
TE: 8-10-12-14-18-(Roman only)
CE, ET, GR: 6-8-10-12-14-18
JM: 6-8-10-12-14-18-(Roman only)
TU: 6-7-8-9-10-11-12-14-18
DM: 6-7-8-9-10-11-12-14
MA: 6-8-10-12-14 and 18-24-(Roman only)
WR: 6-8-10-12-14-18-(Roman only) and APL, Roman only, 24-30-36-60-72-96-120-144
HO: 6-8-10-12-14
VO: 6-7-8-9-10-11-12-14-(Roman only)
TU: (24-30-36-42-48-60-72-84-96-Roman and APL only)

GARAMOND BOLD with Italic and Small Caps, Inter
FS, KI: 6-7-8-9-10-11-12-14-18
BA, DO: 6-8-10-12-14

GARAMOND BOLD with Italic and Small Caps, Lino
TS: 6-7-8-9-10-11-12-14-18-(Roman only)
MT, TH: 6-8-9-10-12-14-18
HU: 6-8-10-12-14
ML: 10
CW, DT: 8-10-12-14
TC: 8-10-12-14-18
BX: 14

GARAMOND BOLD SWASH, Lino
CE: 6-8-10-12-14-18
WR: 6-8-10-12-14

GARAMOND BOLD, Lud
CW, OB: 18-24-30-36-42-48-60-72
LA: 18-24-30-36-48-60
AL, DO, ET, HU, LE: 18-24-30-36-48
AC: 18-24-36-48
KN: 18-24-30-36-48-72
CE, MT, PT: 24-30-36-48
GL: 24-30-36-42-48-60-72-84-96-120-144
JM: 48-60-72
CR, TC: 24-30-36-42-48-60-72
BR: 18-24-30-36

GARAMOND BOLD ITALIC, Lud
CR, TC: 24-30-36-42-48-60-72
CE: 24-30-36-48
OB: 18-24-30-36-42-48
LA: 18-24-30-36-48-60
AL, ET, HU: 18-24-30-36-48
AC, KN: 18-24-36-48
BR, DO, HO, LE, MT: 18-24-30-36
CL: 48
PT: 24-30-36
CW: 18-24-30-36-42-48-60-72

GARAMOND BOLD SWASH, Lud
LE: 18-24-30-36
OB: 18-24-30-36-42-48
CE, HU, TC: 24-30-36-48

GARAMOND BOLD ITALIC SWASH, Lud
JM: 48-60-72

GARAMOND BOLD No. 548 and Italic, Mono
DT: 6-8-9-10-12-14-18-24-30-36-48-60-72
FD, PM, PT: 6-8-10-12-14-18-24-30-36-42-48-60-72
BU: 6-8-10-12-14-18-24-30-36-42-48-60
AT, BT, CO, RU: 6-8-10-12-14-18-24-30-36-48-60-72
AD, BS: 6-7-8-9-10-11-12-14-18-24-30-36
FS, TS, TU: 6-7-8-9-10-11-12
VP: 6-8-9-10-11-12
JM:6-8-9-10-11-12-14-18-24-30-36
ET: 6-8-10-12-14-18-24-30-36
AJ, KI, SC: 6-8-10-12
CN: 6-8-9-10-12-14-16-18-24-30-36-42-48-60-72
ML, MO: 6-7-8-9-10-11-12-14-18-24-30-36-42-48-60-72
BX: 6-8-9-10-12-14-18-24-30-36-42-48-60-72
TY: 6-8-9-10-12
JU: 14-18-24-30-36-48-60-72
BA, TC: 8-10-12
CR: 18-24-30-36
MA: 6-8-10-12-14-18-24-30-36-42-48-60
CC: 6-7-8-9-10-11-12-(Roman only)-14-18-24-30-36-42-48 and 60-72-(Roman only)

GARAMOND BOLD SWASH No. 548, Mono
BX: 6-8-10-12-14-18-24-30-36
BU: 6-8-10-12-14-18-24-30-36-42-48-60
CO, FD, JM, MO: 6-8-10-12-14-18-24-30-36
VP: 6-8-10-12
AT, JU: 8-10-12-14-18-24-30-36
DT: 14-18-24-30-36

GARAMOND BOLD ITALIC SWASH and Finals No. 548, Mono
CO: 6-8-10-12-14-18-24-30-36-48-60-72
JM, ML, PM: 6-8-10-12-14-18-24-30-36
CC, PT: 14-18-24-30-36
MA: 14-18
BX: 6-8-10-12-14-18-24-30-36

GARAMONT No. 248 with Italic and Small Caps, Mono
PT: 6-8-9-10-11-12-14-18-24-30-36-42-48-60-72
CO, DT, SA: 6-8-10-12-14-18-24-30-36-42-48-60-72
BU: 6-8-10-12-14-18-24-36-42-48-72
MA: 6-8-9-10-11-12-14-18-24-30-36-48
MO: 6-8-10-12-14-18-24-30-36 and 42-48-60-72-(Roman only)
ML: 6-8-10-12-14-18-24-30-36 and 42-48-(Roman only)
BT, RU: 6-8-10-12-14-18-24-30-36-48-60-72
FD: 6-8-10-12-14-18-24-30-36
JM: 8-9-10-12-14-18-24-30-36
TY: 8-10-11-(Roman only)-12-14-18-24-(Roman only)
BS: 8-9-10-11-12-14-18-24-30-36-42-48-60-72
VP: 8-9-10-11-12
BA, TC, TY: 8-10-12
JU: 14-18-24-30-36-48-60-72
AD, ET: 14-18-24-30-36
AJ, TS, TU: 6-8-9-10-11-12
KI: 6-8-10-11-12
AT: 6-8-9-10-12-14-18-24-30-36-60-(Roman only)
BX: 6-8-10-12-14-18-24-30-36-42-48-60-72
CC: 6-8-9-10-11-12-(Roman only)-14-18-24-30-36-42-48 and 60-72-(Roman only)
SC: 6-8-10-12 and 14-18-(Roman and small caps only)-24-30-36-(Roman only)

GARAMONT ITALIC SWASH No. 248, Mono
BX, CO: 6-8-10-12-14-18-24-30-36
CC, PT: 14-18-24-30-36-42-48
JU: 14-18-24-30-36-48-60-72
DT, FD, JM, ML, MO: 14-18-24-30-36
MA: 14-18

GARAMONT SMALL CAPS No. 248, Mono
BX, CO: 14-18
MO: 8-10-12-14-18

GERMAN No. 3 with Bold No. 2, Lino
ML: 6-9-10-11

GERMAN HEINTZMANN No. 100, Mono
KI: 6-8-10
HA: 8-10-12
ML: 10-12

GILL LIGHT (English Mono)
BU: 8

GILL BOLD (English Mono)
BU: 8

GIRDER LIGHT No. 190, Mono
(See Stymie Light—Mono)

GLAMOUR LIGHT No. 235, Mono
DT, JM, JU: 14-18-24-30-36

GLAMOUR MEDIUM No. 236, Mono
BT, JM, JU, RU: 8-10-12-14-18-24-30-36
DT: 14-18-24-30-36

GLAMOUR BOLD No. 237, Mono
BT, JU: 8-10-12-14-18-24-30-36
DT, JM: 14-18-24-30-36
ML: 18-24-30-36

GOTHIC, Lino
HO: 4-5-5½-6-8
AB: 6-(4 sizes)-12-(3 sizes)
WR: 5-6-8
AT: 10
RU: 8-10

GOTHIC BOLD, Lud
AB: 6-(4 sizes)-12-(4 sizes)-18-(2 sizes)

GOTHIC No. 3, Lino
DT: 6-8-10
JM: 6-7
CC, KI: 7
JE: 6-7-8
CW: 10-11

GOTHIC (No. 3) No. 249, Mono
CO, JM: 6-7-8-10-12
ML, MO, TC: 6-8-10-12
BU: 6-7-10
DT: 6-7-8
KI: 6-7
AJ: 6
ET: 6-(caps only)
BX: 8-10
SC: 6-8-10

GOTHIC No. 2 with No. 3, Inter
(See reverse order)

GOTHIC No. 3 with No. 2, Lino
(See reverse order)

GOTHIC No. 3 with Ideal News, Inter
(See reverse order)

GOTHIC No. 4, Lino
CR: 5-6
BU: 7
CC, DA, JE, KI: 5

GOTHIC No. 4 with No. 1, Lino
(See reverse order)

GOTHIC No. 4 with No. 10, Inter
(See reverse order)

GOTHIC No. 4 wtih No. 10, Lino
(See reverse order)

GOTHIC No. 4 with No. 12, Lino
(See reverse order)

GOTHIC No. 5 with Gothic Condensed No. 1, Inter
AT: 12

GOTHIC (No. 6) No. 149, Mono
MA: 5-6-8-10
MO: 5½-6-8-10-12
BU: 5½-8
FD: 6-(2 sizes)
BT: 6
DT: 8
ET: 6-8
AT, JM, ML, PM: 6-8-10-12

GOTHIC No. 8
CC: 6

GOTHIC No. 8 with No. 12, Lino
(See reverse order)

GOTHIC No. 8 with No. 2, Lino
(See reverse order)

GOTHIC No. 11 with No. 12, Inter
(See reverse order)

GOTHIC (BELL) LIGHT No. 13, Lino
TS: 6
ML: 7

New York City
AB Abend Typograph Co., Inc.
AD Advertising Agencies Service Co., Inc.
AL Allied Typographers, Inc.
AC Atlantic Linotype Co., Bklyn.
BA M. J. Baumwell, Typography
BX Baxter and Spencer, Inc.
BR Boro Typographers, Inc.
BU Howard O. Bullard, Inc.
CC Cooper and Cohen, Inc.
CE Central Linotypers, Inc.
CL Crescent Linotyping Corp.
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ET A. T. Edwards Typography, Inc.
FS Frederick W. Schmidt, Inc.
GL Ganer Linotype Craftsmen
HO F. Hochstadt Co.
HU Hurst Linotypers, Inc.
JE A. O. Jennings, Inc.
JU Judson Type, Inc.
KI King Typographic Service Corp.
KN Kline Linotyping Co., Inc.
LA Lafayette Linotyping, Inc.

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MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schirmer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.
BT Baltimore Type & Comp. Corp.

Boston, Mass.
GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

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Cincinnati, Ohio
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Dayton, Ohio
DA Dayton's Typographic Service

Detroit, Mich.
DT Detroit Typesetting Co.

Philadelphia, Pa.
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JM John C. Meyer & Son
RU Ruttle, Shaw & Wetherill, Inc.
TY Typographic Service, Inc.
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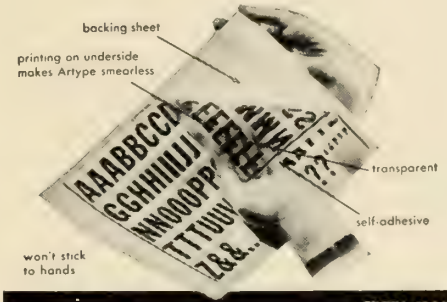
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For Attn. of _____

GOTHIC (BELL) LIGHT No. 13, Lino
MO: 7-8
BU: 12
RU: 18-24-30

GOTHIC (BELL) MEDIUM No. 13, Lino
MO: 7-8

GOTHIC (BELL) BOLD No. 13, Lino
MO: 8

GOTHIC No. 13, Inter
AL: 8-10-12-14
FD: 10-12-14-18-24-30-36
DA: 12-14-18-24-30

GOTHIC No. 13, Special on Mono
BU: 72

GOTHIC No. 13 with Cheltenham Bold Condensed, Lino
DE, ET, GL, JE: 8-10-12-14
ML: 8

GOTHIC No. 13 CONDENSED with Cheltenham Bold Condensed, Lino
JE: 8-10-12-14

GOTHIC No. 13, Lino
TU: 8-10-12-14

GOTHIC No. 14, Lino
RU: 34
ML: 36-(caps only)

GOTHIC No. 14 CONDENSED, Lino
ML: 34

GOTHIC No. 16, Lino
ML: 18-24
DT: 30-36

GOTHIC No. 16 with Century Expanded, Lino
(See reverse order)

GOTHIC No. 16 with Cheltenham Bold, Lino
AT: 6
FD: 8-10-12
ML: 8-10-12-14

GOTHIC No. 16 with Hobo
BA: 14

GOTHIC No. 16 with Title No. 4, Lino
AT: 8-10-12
CO: 10-14
HO: 12

GOTHIC No. 18, Lino
MO: 12-14

GOTHIC No. 25 with Gothic No. 26, Lino
ML: 6-(2 sizes)-8-10-12

GOTHIC No. 50 with Gothic No. 51, Lino
GL: 8-10-12-14

GOTHIC ALTERNATE No. 1, Inter
KN: 8-10-12-14
MA: 12-14-18-24
CS: 14
TS: 18-24-30

GOTHIC ALTERNATE No. 1 with Vogue Bold Condensed, Inter
TS: 8-10-12-14
KN: 10-12-14

GOTHIC ALTERNATE (No. 1) No. 51, Mono
CC, DT: 6-8-10-12-14-18-24-30-36-42-48-60-72-84-(caps)
ML: 6-8-10-12-14-18-24-30-36-48-60-72-84/72
MO: 6-8-10-12-(14-18-24-30-36 also round characters)-42-48-60-72
BX: 6-8-10-12-14-18-24-30-36-42-48-60 72-84
CO, PT: 6-8-10-12-14-18-24-30-36-42-48-60
JM, SC: 6-8-10-12-14-18-24-30-36
BU: 8-10-12-14-18-24-30-36-48-60-72
AT: 8-10-12-14-18-24-30-36-42
RU: 10-12-14-18-24-30-36-48-60-72-84/72
ET: 10-14-18-24-30-36-42-(caps only)
TY: 10
TH, TU: 10-12
BS: 12-14-18-24-30-36-42-48-60-72
FD: 14-18-24-30-36-42-48-60-72
BT, JU: 14-18-24-30-36-48-60-72-84
MA: 14-18

GOTHIC ALTERNATE (No. 2) No. 77, Mono
AD: 6-8-10-12
CO: 6-8-10-12-14
MA: 6-8-10-12-14-18-24
BU, ET, ML, MO: 6-8-10-12-14-18-24-30-36
VP: 8
DT: 10
AT: 14-18
BS, BX, CC, JU, PM: 14-18-24-30-36
FD: 30-36

GOTHIC ALTERNATE (No. 3) No. 177, Mono
BU, BX: 14-18-24
CC: 14-18-24-30-36

GOTHIC ALTERNATE CONDENSED, Lud
AN, HU: 6-8-10-12-14-18-24-30-36-48
GR: 8-12-14-18-24-30-36-42-48-60-72
OB: 14-18-24-30-36-48
AL: 14-18-24-30-36-42-48-60-72
BR, LA: 18-24-30-36-48
JM: 48-60-72

GOTHIC BANKERS, Special on Mono
RU: 6-12-(4 sizes each)
AB: 6-12-(3 sizes each)

GOTHIC BOLD INCLINED No. 132, Mono
AT: 6-8-10-12

GOTHIC BOLD, Lino
AB: 6-12-(3 sizes each)

GOTHIC BOLD CONDENSED No. 16 with CENTURY
AB: 4

GOTHIC CONDENSED, Lino
MT: 8-10-12-14
HO: 10-11-18
RU: 11

GOTHIC CONDENSED, Lud
AB: 6-(4 sizes)-12
AC: 12-14-18-24-30-36-48-60-72
KN: 12-14-18-24-30-36-42-48-60-72
AT, TU: 14-18-24-30-36-42-48-60-72
CR: 18-24-30-36-42-48-60-72
AL, LE, HU: 18-24-30-36-48

GOTHIC MEDIUM CONDENSED MODERNIZED No. 6-B, Lud
ML: 60
CW: 14-18-24-30-36-48-60-72

GOTHIC ULTRA CONDENSED, Lud
AB: 18-24-30-36-48

GOTHIC CONDENSED MODERNIZED No. 6-C, Lud
KI: 18-24-30-36-42-48
ML: 42-48-60-72
CW: 14-18-24-30-36-48-60-72

GOTHIC CONDENSED No. 1, Lino
BU: 10-11-14
RU: 18

GOTHIC CONDENSED No. 1, Inter
AT: 10

GOTHIC CONDENSED No. 2, Lino
CE: 8-10-12-14-18-24-30-(caps only)
DO: 8-12
MA: 12
BU, RU: 18
ML: 36
TE: 18-24-30-36-48-(APL)
CO: 18-24

GOTHIC CONDENSED No. 2 with Telephone Gothic, Lino
CR: 6-10

GOTHIC CONDENSED No. 2 with Gothic No. 25, Lino
ML: 6

GOTHIC CONDENSED (Medium) No. 3, Lino
CR: (APL)-72
WR: (APL)-72-96-120-144

GOTHIC CONDENSED No. 4 with No. 11, Lino
(See reverse order)

GOTHIC CONDENSED No. 48, Caps, Mono
JM: 5-6-7-8-9-10-11-12
CO: 5-8-10-12
BT, BU, ML, MO, PM: 6-8-10-12
BX: 6-8
HA: 6-10
FD: 8-10-12
SC: 6-12

GOTHIC CONDENSED No. 49, Mono
JM: 5-6-8-10-12
KI: 5-8
AT, ML, MO, PM: 6-8-10-12
BS, BT, BX, CO, HA, SC, TU: 6
CC, FD: 6-8
MA: 6-12
DT: 6-8-10
FS: 8
CW: 10-12

GOTHIC MEDIUM CONDENSED No. 140, Mono
CW: 8-10-12-42

GOTHIC No. 526, Mono
AT: 8

GOTHIC (No. 6) No. 149, Mono
BS: 5½

GOTHIC CHAMFER CONDENSED No. 121, Mono
ML: 30

GOTHIC CONDENSED TITLE (No. 11) No. 43, Mono
AT: 10-12-24
BU, BX: 72
MO: 6-8-10-12-14-18-24-30-36-42-48-60-72-84
DT: 48-60-72

GOTHIC CONDENSED TITLE (CAPS), APL
TU: 120

GOTHIC EXTRA CONDENSED, Inter
FD: 8-10

GOTHIC EXTRA CONDENSED, Lino
ML: 6 and 8-18-36-(caps only)
RU: 10
HO: 6-8-10-12-14

GOTHIC EXTRA CONDENSED with ROMAN, Lino
(See reverse order)

GOTHIC EXTRA CONDENSED, Lud
FS: 6-18-24-30-36-48
HO: 10-12-14-18-24-30-36-48-144
DO: 14-18-24-30-36-48-60
AL, ET: 18-24-30-36-48
WR: 10-12-14-18-24-30-36-42

GOTHIC COPPERPLATE (LINING) LIGHT No. 32, Lino
AC, AL, CE, CO, DA, GL, JM, LA: 6-12-(4 sizes each)
HO: 6-12-18 (4 sizes each)
AT, DT: 6-12 (3 sizes each)
CR, TC: 6 (4 sizes)
JM: 6-(3 sizes)

GOTHIC COPPERPLATE, Inter
KN: 6 (4 sizes)-12 (3 sizes)

GOTHIC COPPERPLATE, Lud
AL, CR: 12 (4 sizes)-18
GR, OB: 6-12 (4 sizes each)-18 (2 sizes)
CW: 12 and 18 (2 sizes)

GOTHIC COPPERPLATE, Lino
GR, MA: 6-12 (3 sizes each)
BR: 6-12 (4 sizes each)
CW: 6 (4 sizes)-10-11-12 (3 sizes)
HO: 6-12 (4 sizes)-18 (2 sizes)

GOTHIC COPPERPLATE LIGHT Nos. 187 and 340, Mono
AT: 6 (4 sizes) 8-10-12-14
DT: 6-12 (4 sizes each); 14-18-24 (2 sizes each)
ML: 6-12 (4 sizes each); 18-24 (2 sizes each)
PM: 6-12 (4 sizes each); 18 (3 sizes), 24 (2 sizes)
ET: 6 (2 sizes)-12
BX, JM, TC: 6-12 (4 sizes each)
CO: 8-10
MO: 4-5-6-8-10-12-14-18-24
MA: 14-18-24 (2 sizes)

GOTHIC COPPERPLATE LIGHT CONDENSED Nos. 197 and 341, Mono
AT, ML, PM: 8-12 (4 sizes each)
MA: 6-12 (4 sizes each); 18-24 (2 sizes each)
JM: 6 (4 sizes)
MO: 4-5-6-8-10-12-14-18-24
SC: 5
CN: 6-12 (2 sizes)

GOTHIC COPPERPLATE (LINING) CONDENSED No. 29, Lino
HO: 6-12 (4 sizes each)

GOTHIC COPPERPLATE (LINING) CONDENSED No. 29 with BOLD No. 30, Lino
WR: 6-12 (4 sizes each)
LE: 6-12 (3 sizes each)
ML: 6
DA, GL: 6 (3 sizes)
DT: 12

GOTHIC COPPERPLATE (LINING) No. 30, Caps only, Lino
CO: 18

GOTHIC COPPERPLATE (LINING) BOLD No. 30 with HEAVY No. 31, Lino
LE: 6-12 (3 sizes each)
LA: 6 (2 sizes)

GOTHIC COPPERPLATE BOLD No. 31, Lino
TU: 6-12 (4 sizes each)

GOTHIC COPPERPLATE (LINING) HEAVY No. 31, Lino
AC, AL: 6-12 (4 sizes each)
CR, GL: 6-12 (4 sizes each); 18
DT: 6-12 (3 sizes each)
TC: 6 (4 sizes)
JE: 6 (3 sizes)

GOTHIC COPPERPLATE (LINING) HEAVY No. 31 with LIGHT No. 32, Lino
GL: 6-12 (4 sizes each); 18
DA, WR: 6-12 (4 sizes each)
LE, RU: 6-12 (3 sizes each)
ML: 6-12 (2 sizes each)
DT: 6 (4 sizes)-12 (3 sizes)
CO, HO: 6 (4 sizes)
JE: 6 (3 sizes)

GOTHIC COPPERPLATE No. 31 with ENGRAVERS ROMAN (BOLD FACE) No. 9, Lino
AT, BU, CE, DO, JM, MA, MC, ML, RU, SL: 6-12-(4 sizes each)
HU, TE: 6-12 (3 sizes each)

New York City
- **AB** Abend Typograph Co., Inc.
- **AD** Advertising Agencies Service Co., Inc.
- **AL** Allied Typographers, Inc.
- **AC** Atlantic Linotype Co., Bklyn.
- **BA** M. J. Baumwell, Typography
- **BX** Baxter and Spencer, Inc.
- **BR** Boro Typographers, Inc.
- **BU** Howard O. Bullard, Inc.
- **CC** Cooper and Cohen, Inc.
- **CE** Central Linotypers, Inc.
- **CL** Crescent Linotyping Corp.
- **CO** Commanday Bros., Inc.
- **CR** Composing Room, Inc.
- **CS** Composition Service, Inc.
- **CN** Consolidated Production Service, Inc.

New York City
- **CW** Fred. A. Crowell, Inc.
- **DM** Diamant Typographic Service, Inc.
- **DO** Downtown Typesetter, Inc.
- **EM** Empire State Craftsmen, Inc.
- **ET** A. T. Edwards Typography, Inc.
- **FS** Frederick W. Schmidt, Inc.
- **GL** Ganer Linotype Craftsmen
- **HO** F. Hochstadt Co.
- **HU** Hurst Linotypers, Inc.
- **JE** A. O. Jennings, Inc.
- **JU** Judson Type, Inc.
- **KI** King Typographic Service Corp.
- **KN** Kline Linotyping Co., Inc.
- **LA** Lafayette Linotyping, Inc.

New York City
- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

Baltimore, Md.
- **BT** Baltimore Type & Comp. Corp.

Boston, Mass.
- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.
- **SA** Axel E. Sahlin Typog. Service

Chicago
- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

Cincinnati, Ohio
- **FD** J. W. Ford Co.

Dayton, Ohio
- **DA** Dayton's Typographic Service

Detroit, Mich.
- **DT** Detroit Typesetting Co.

Philadelphia, Pa.
- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

Providence, R. I.
- **TC** Typesetting Service Co.

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LINOTYPE FACES

ANTIQUE with Italic ... 12
ANTIQUE with Old Style ... 6-8-10-12
ANTIQUE No. 1 with Bevinne ... 8
BASKERVILLE with Italic ... 8-9-10-11-12-14
BASKERVILLE (1 letter mat) ... 10
BENEDICTINE with Italic ... 8-10-12
BENEDICTINE BOOK with Italic ... 6-8-10-12-14
BODONI with Italic ... 6-8-10-12-14
BODONI (1 letter mat) ... 18
BODONI BOOK with Italic ... 6-8-9-10-12-14
BODONI BOLD with Italic ... 6-8-10-12-14
BODONI BOLD (1 letter mat) ... 18
BOOKMAN with Italic ... 6-8-10
CARIO with Bold ... 6-8-10-12-14
CALEDONIA with Italic ... 8-9-10-11-12-14
CASLON with Italic ... 8-9-10-11-12-14
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CASLON OLD FACE with Italic ... 8-9-10-11-12-14-18
CASLON TEXT ... 10
CENTURY with Italic ... 8-9-10
CENTURY with Bold ... 8
CENTURY with Franxon Gothic ... 4
CENTURY with Cheltenham Bold ... 6-8-10-12-14
COOPER BLACK with Italic ... 14
CHELTENHAM WIDE with Bold ... 8-10-12-14
CHELTENHAM BOLD (1 letter mat) ... 18
CHELTENHAM BOLD with Old Style ... 6
CHELTENHAM BOLD with Century ... 6-8-10-12-14
CHELTENHAM BOLD with Wide ... 8-10-12-14
CLOISTER BOLD with Italic ... 6-8-10-12-14-18
CLOISTER BOLD (1 letter mat) ... 24
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DEVINNE with Italic ... 5-6-10-12
DEVINNE with Antique No. 3 ... 8
EGMONT with Italic ... 8-10-12-14
EGMONT (1 letter mat) ... 18
EDMONT MEDIUM with Italic ... 8-10-12-14
EGMONT MEDIUM (1 letter mat) ... 18
ELECTRA with Italic ... 8-10-11-12-14
ENGRAVERS ROMAN ... 6-12
ESTIENNE with Italic ... 8-10-12-14
FAIRFIELD with Italic ... 6-8-9-10-11-12-14
FUTURA BOLD CONDENSED ... 6-8-10-12-14
FUTURA MED. CONDENSED ... 8-10-12-14-14 No. 2
FUTURA DemiBOLD with Italic ... 8-10-12-14
GARAMOND with Italic ... 6-8-10-11-12-14
GARAMOND (1 letter mat) ... 18
GARAMOND ITALIC (1 letter mat) ... 18
GARAMOND BOLD with Italic ... 8-10-12-14
GARAMOND BOLD (1 letter mat) ... 18
GOTHIC (FRANKLIN) with Century ... 4
GOTHIC No. 3 with Roman No. 2 ... 6-8
GOTHIC No. 3 ... 10-11
GOTHIC No. 4 with Roman No. 1 ... 5-7
GOTHIC COND. No. 48 with Roman No. 11B ... 6
GRANJON with Italic ... 8-9-10-11-12-14
GRANJON (1 letter mat) ... 18
GRANJON ITALIC (1 letter mat) ... 18
GRANJON with Bold ... 10
ID AL NEWS with Italic ... 8
IDEAL NEWS with Bold ... 6-8
JANSON with Italic ... 8-9-10-11-12-14
KENNTONIAN with Italic ... 6-8-10-12-14
KENNTONIAN (1 letter mat ... 18
KENNTONIAN ITALIC (1 letter mat ... 18
MEMPHIS MEDIUM with Italic ... 6-8-10-12-14
MEMPHIS BLACK with Italic ... 8-10-12
METROLITE with Black ... 6-8-10-12-14
METROTHIN with Medium ... 8-10-12
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OLD STYLE with Antique ... 6-8-10-12
OLD STYLE with Italic ... 6-8-10-12
OLD STYLE with Cheltenham Bold ... 6-8
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ROMAN No. 1 with Gothic No. 1 ... 5-7
ROMAN No. 17 with Cond. Title No. 5 ... 6
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SCOTCH ROMAN with Italic ... 8-10-11-12
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VOGUE with Bold ... 6-8-10-12-14-18
VOGUE OBLIQUE with Bold Oblique ... 8-10-12-14
VOGUE EXTRA BOLD with Oblique ... 6-8-10-12-14
WAVERLY with Italic ... 8-9-10-11-12-14

LUDLOW FACES

BODONI ... 24-30-36-42
BODONI ITALIC ... 18-24-30
BODONI BOLD ... 24-30-36-42-48-60-72
BODONI BOLD ITALIC ... 18-24-30-36-48
BODONI CAMPANILE ... 18-24-30-36-48-60-72
BODONI MODERN (Ultra Bodoni) ... 18-24-48
CAMEO ... 18-24-30-36-48
CASLON ITALIC ... 18-24-30-36-42
CASLON OLD FACE HEAVY ... 18-24-30-36-48
CASLON OLD FACE HEAVY ITALIC ... 18-24-30-36-48
CASLON OLD FACE ... 22-24-30-36-42-48-60-72
CASLON OLD FACE ITALIC ... 22-24-30-36-42-48
CHELTENHAM BOLD ... 24-30-36-48
CHELTENHAM BOLD CONDENSED ... 18-24-30-42
COOPER BLACK ... 18-24-36-48
CORONET ... 18-24-30-36-48-60-72
CORONET BOLD ... 18-24-30-36-48-60-72
COPPERPLATE GOTHIC ... 6-12-18
DELPHIAN ... 36-48
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EDEN BOLD ... 14-18-24-30-36-48-60-72
GARAMOND ... 24-30-36-42-48
GARAMOND ITALIC ... 24-30-36
GARAMOND BOLD ... 18-24-30-36-42-48-60-72
GARAMOND BOLD ITALIC ... 18-24-30-36-42-48-60-72

GOTHIC COND No. 6 C ... 14-18
GOTHIC MEDIUM COND ... 14
GOTHIC (SQUARE) ... 14
GOUDY ... 14
GOUDY ITALIC ... 14
GOUDY BOLD ... 14-18
GOUDY BOLD ITALIC ... 14
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KARNAK ... 14
KARNAK MEDIUM ... 14
KARNAK BLACK ... 14-18
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MAYFAIR CURSIVE ... 18-24
RADIANT BOLD EXTRA COND ... 14
STELLAR ... 14-18
STELLAR BOLD ... 14
SQUARE GOTHIC ... 14
TEMPO MEDIUM ... 14
TEMPO BOLD ... 18-24
TEMPO HEAVY ... 18-24
TEMPO BOLD ITALIC ... 18
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UMBRA ... 24-36-48

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BODONI MODERN ITALIC (ULTRA) ... 18-24-30-36
CASLON OPEN FACE ... 18-24-30-36-48
CLOISTER TEXT ... 14-18-24-30-36
COOPER BLACK ... 8-10-12-14
EGMONT ... 24
EGMONT MEDIUM ... 24
FRANKLIN GOTHIC ... 14-18-24-30-36
KAUFMAN BOLD ... 14-18-24-30-36-48
ONYX ... 24-30-36-48
SWING BOLD ... 14-18-24-30-36-48
STYMIE EXTRA BOLD COND. ... 14-18-24-30-36-48
VOGUE ... 24-30-36
VOGUE BOLD ... 24-30-36
VOGUE EXTRA BOLD ... 18-24-30
VOGUE EXTRA BOLD OBLIQUE ... 18-24-30

FOUNDRY FACES

ALLEGRO ... 12-16-24
AMERICAN TEXT ... 18-24-30
BANK SCRIPT ... 18-24-36
BARNUM, P. T. ... 12-14-18-24
BERNHARD GOTHIC MED. ITALIC ... 14-18-24-30-36
COMMERCIAL SCRIPT ... 18-24-30-36
CORVINUS SKYLINE ... 10-12-14-18-24-30-36
EGMONT ... 24-30-36-42-48-60
EGMONT MEDIUM ... 24-30-36-42-48-60
EVE ... 18-24
LEGEND ... 24-36-48
LILITH ... 24
ONYX ... 36
P. T. BARNUM ... 12-14-18-24
ROMANY ... 14-18-24-30-48

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GOTHIC COPPERPLATE No. 31 with ENGRAVERS ROMAN (BOLD FACE) No. 9, Lino
HO: 6-12 (4 sizes each); 18 (2 sizes)
WR: 6-12 (4 sizes each); 18
CL: 6 (3 sizes)-12 (4 sizes)-18 (2 sizes)
FD: 6 (4 sizes)-12 (2 sizes)
OB: 6 (4 sizes)-12 (3 sizes)
AL: 6 (3 sizes)
CO, RS: 6 (4 sizes)

GOTHIC COPPERPLATE (LINING) LIGHT No. 32 with No. 33, Lino
WR: 6-12 (4 sizes each)
LA: 6 (4 sizes), 12
ML: 6 (4 sizes)-12 (3 sizes)
MO: 6-12
JM: 6 (3 sizes)
CO, NY: 12

GOTHIC COPPERPLATE No. 32, Lino
TU: 6-12 (4 sizes each)

GOTHIC COPPERPLATE BOLD No. 345, Mono
CO, JM, ML, PM: 6-12 (4 sizes each)
AT: 6-8-10-12-14-18
MO: 6-8-10-12-14-18-24

GOTHIC COPPERPLATE BOLD ITALIC No. 346, Mono
PM: 6-12 (4 sizes each)
AT: 6-12

GOTHIC COPPERPLATE HEAVY No. 168 and 342, Mono
DT, JM, ML: 6-12 (4 sizes each)-14 and 18-24 (2 sizes each)
AT: 6-8-10-12-14-18
PM: 6-12 (4 sizes each); 18 (3 sizes); 24 (2 sizes)
BU: 5-6 (4 sizes)-12
PT, SC, TC: 6-12 (4 sizes each)
FD, MA: 6-12 (4 sizes each); 18-24 (2 sizes each)
JM: 6 (4 sizes); 12 (2 sizes)-14 and 18-24 (2 sizes each)
BX: 6-12 (4 sizes)
BS: 6-12 4 sizes each)-14-18
RU: 12 (4 sizes)-14-18 (2 sizes)
MO: 5-6-8-12
KI: 6-8-10
CO: 6-12 (4 sizes each)-14
BT: 6-12 (4 sizes each)-14; 18 (2 sizes)-24
CC: 6-12 (4 sizes each) No. 342 only

GOTHIC COPPERPLATE HEAVY CONDENSED Nos. 169 and 343, Mono
AT: 6-8-10-12-14-18
KI: 5-6-8-10-12
DT, MA, ML: 6-12 (4 sizes each)-14 and 18-24 (2 sizes each)
JM, PM, TC: 6-12 (4 sizes each)
BS, BU: 6 (4 sizes)
BT: 6-12 (4 sizes each)-14; 18 (2 sizes)-24
MO: 6-8-10-12-14-18-24
MA: 6-12-18-24

GOTHIC COPPERPLATE HEAVY EXTENDED Nos. 166 and 344, Mono
AT: 6-12 (Italic)
MO: 6-12-14-18
BU: 8-10
KI: 6-8-10
ML: 6 (4 sizes); 8-10-14 (2 sizes each)-18
BT: 6 (4 sizes); 12 (3 sizes)-14-18 (2 sizes)

GOTHIC COPPERPLATE HEAVY, Lino
MA: 6-12 (4 sizes each)

GOTHIC COPYRIGHT, Lino
ML: 6

GOTHIC FRANKLIN, Inter
FD: 4-8-10-12-14-18-24
KI: 4-5-6-8-10-12-14

GOTHIC FRANKLIN ITALIC, Inter
KI: 6-8-10-12-14

GOTHIC FRANKLIN with Italic, Lino
TH: 4 (Roman only)-6-8-10-12

GOTHIC FRANKLIN ITALIC, Lino
TE: 18-24-30-36-48 (APL)

GOTHIC FRANKLIN CONDENSED, Lino
LA: 8-10-12-14

GOTHIC FRANKLIN EXTRA CONDENSED, Lino
GL: 24-30-36-42-48-60-72-84-96-120-144 (APL)
CR: 60-72-84-96-120-144 (APL)
TH: 6-8-10-12
TE: 18-24-30-36-48 (APL)

GOTHIC FRANKLIN, Lud
LA: 18-24-30-36-48-60-72
JM: 48-60-72

GOTHIC FRANKLIN CONDENSED, Lud
HU: 10-12-14-18-24-30-36-42-48
JM: 48-60-72
CL: 14-18-24-30-36-42-48-60-72

GOTHIC FRANKLIN EXTRA CONDENSED, Lud
TU: 18-24-30-36-42-48-60
CR: 24-30-36-42-48
ML: 42-48-60-72
BR: 18-24-30-36-48

GOTHIC FRANKLIN EXTRA CONDENSED, APL
TU: 24-30-36-42-48-60-72-84-96

GOTHIC FRANKLIN with Century, Lino
GR: 5

GOTHIC FRANKLIN No. 107, Mono
AT, BS, BT, BX, CO, FD, ML: 5-6-8-10-12-14-18-24-30-36-42-48-60-72
CC, DT, PT: 6-8-10-12-14-18-24-30-36-42-48-60-72
RU: 6-8-10-12-14-18-24-30-36-48-60-72
TY: 6-8-10-12-14-18-24-30-36
AD, ET, JM: 5-6-8-10-12-14-18-24-30-36
TU: 5-6-8-10-12
TS: 5-6-8-10
BA: 6 (caps only)-10
KI: 6-7-8-10-12
CW: 14-18-24-30-36
FS: 10
BU: 14-18-24-30-36-42-48-60-72
JU: 8-10-12-14-18-24-30-36-48-60-72
CR: 5-14-18-24-30-36-42-48-60-72
MO: 4-5-6-8-10-12-14-18-24-30-36-42-48-60-72
MA: 5-6-8-10-12-14-18-24-30-36-48-60-72
SC: 6-8

GOTHIC FRANKLIN CONDENSED No. 707, Mono
BU, BX: 14-18-24-30-36
CC: 14-18-24-30-36-42-48-60-72

GOTHIC FRANKLIN CONDENSED No. 140, Mono
(See Gothic Tourist—Mono)

GOTHIC FRANKLIN EXTRA CONDENSED No. 507, Mono
BS, BX, CO, FD: 14-18-24-30-36-42-48-60-72
ET: 14-18-24-30-36
AD: 14-18-24-30-36-42
CC, MO: 14-18-24-30-36-42-48
BU: 14-148-18-188-24-30-36-42-48-60-72

GOTHIC GLOBE No. 240, Mono
MO: 30
JM: 14-18-24-30-36

GOTHIC GLOBE CONDENSED No. 239, Mono
MO: 30

GOTHIC GLOBE EXTRA CONDENSED No. 230, Mono
MO: 18-24-30-36

GOTHIC INCLINED BOLD No. 132,
AT: 6-8-10-12

GOTHIC JEFFERSON No. 227, Mono
AT, DT, ML, MO: 14-18-24-30-36-42-48-60-72
CC: 14-18-24-30-36-42-48
BU: 14-18-24-30-36 (alt. char. 14 to 36); 42-48-60-72
BX: 14-18-24-30-36 (alt. char.)

GOTHIC LIGHT, Lud
AB: 6 (4 sizes)-12 (3 sizes)

GOTHIC LIGHTLINE No. 352, Mono
MO: 4-4½-5-6

GOTHIC LIGHTLINE No. 149, Mono
BX: 5½-6

GOTHIC LINING LIGHT No. 106, Mono
AT: 6-12-14-18
ML: 6-8-10-12

GOTHIC LINING MEDIUM No. 129,
ML: 36

GOTHIC LINING No. 176, Mono
MO: 6-8-10-12
BT, DT: 6
PM: 8
ML: 8-10-12

GOTHIC LINING MID. (No. 2) No. 276, Mono
FD, PT: 14-18-24-30-36
ML: 10-12-14-18-24-30-36

GOTHIC LINING (No. 545) No. 66, Mono
AT, BU, ML, MO, PM, PT: 5-6-8-10-12-14-18-24-30-36
JM: 6-8-10-12-14-18-24-30-36
TC, TU: 6-8-10-12
BS: 5-6-8-10-12
TS: 5-6-8
CO, ET: 5-6
KI: 6
BX: 5-6-8-10-12-14-18-24
MA: 6-8-10-12-14-18-24
CC: 5-6-8-10-12-14-18-24-30-36 (No. 66 only)
SC: 5-8-30-36

GOTHIC SMALL CAPS (Lining No. 545), No. 66, Mono
SC: 5 (Mono)

GOTHIC LINING (No. 545) No. 349, Mono
MO, TC: 6 (4 sizes)

GOTHIC LINING (No. 7) No. 165, Mono
AT: 8-10-12-14-18
BU: 9

GOTHIC LINING No. 166, Mono
BX: 14-18 (2 sizes each)

GOTHIC LINING (No. 7) MODERN No. 350, Mono
KI: 4-5-6 (all on 6 pt.)

GOTHIC LINING PLATE, Lud
KN: 6 (2 sizes)-12 (4 sizes)-18 (2 sizes)-24

GOTHIC LINING PLATE HEAVY, Lud
HO: 6 (4 sizes); 12 (4 sizes)-18 (2 sizes)
RS: 6-12 (4 sizes each); 18-24 (2 sizes)
OB: 6-12 (4 sizes each)-18 (2 sizes)
AL, JE: 12 (4 sizes)
AC: 18 (2 sizes)

GOTHIC LINING PLATE HEAVY CONDENSED, Lud.
HO: 18 (2 sizes)
RS: 6 (2 sizes)
TC: 6 (4 sizes)-12-18
SC: 6-12 (4 sizes each)-18 (2 sizes)

GOTHIC LINING PLATE LIGHT, Lud
CE: 18 (2 sizes)
CL: 6 (3 sizes)-12 4 sizes)-18 (2 sizes)
LE: 12-18 (2 sizes)
TC: 6 (4 sizes)
ET: 6 (4 sizes)-12 (3 sizes)
KN: 6 (4 sizes)-12 (4 sizes)-18
HO: 6-12 (4 sizes each)

GOTHIC LINING PLATE LIGHT CONDENSED, Lud
TU: 6 (4 sizes)

GOTHIC MEDIUM CONDENSED, Lud
KN: 6-8-10-12-14-18-24-30-36-48-60-72-84-96 (caps only)
AB: 6-10-12-14-18-24-30-36-48-60-72-84
CE: 10-12-14-18-24-30-36-48-60-72
HO: 12-14-18-24-30-36
KI: 12-18-24-30-36-48-60-72
WR: 12-14-18-24-30-36-48
OB: 14-18-24-30-36-48-60-72 (caps only)
GR: 14-18-24-30-36-42-48-60-72
ET: 18-24-30-36-42-48-60
MT: 18-24-30-36-48-60
AL, CL: 18-24-30-36-42-48-60-72
JM: 48-60-72

GOTHIC MEDIUM CONDENSED with Variant Characters, Lud
KN: 12-14-18-24-30-36-48
AC: 12-14-18-24-30-36-48-60-72
HO: 12-14-18-24-30-36-42-48-60-72
CE: 18-24-30-36-48
WR: 18-24-30-36

GOTHIC MODERN CONDENSED No. 140, Mono
(See Gothic Tourist No 140—Mono)

GOTHIC MODERNIZED No. 51, Mono
(See Gothic Alternate (No. 1) No. 51—Mono)

GOTHIC NEWS No. 206, MONO
MO: 6-8-10-12-14-18-24
AT: 8
ET: 8-10-12

GOTHIC NEWS CONDENSED No. 204, Mono
ET: 5-6-8-10-12-14-18-24-30-36
MO: 5-6-8-10-12-14-18-24
BS, KI, JM, ML: 5-6-8-10-12
VP: 5-6-8-10
TS: 5
MA: 8
AD: 6-8
AT: 6-8-10-12-14-18-24
CC: 14-18-24

GOTHIC NEWS EXTRA CONDENSED No. 227, Mono
JU: 10-12-14-18-24-30-36-48-60-72
MO: 14-18-24-30-36-42-48-60-72 (caps only)
MA: 14-18-24-30-36-42-48

GOTHIC OUTLINE, Mono
(See Contour—Mono)

GOTHIC PHILADELPHIA LINING No. 52, Mono
ML: 10
MO: 14-18-24-30-36

New York City
AB Abend Typograph Co., Inc.
AD Advertising Agencies Service Co., Inc.
AL Allied Typographers, Inc.
AC Atlantic Linotype Co., Bklyn.
BA M. J. Baumwell, Typography
BX Baxter and Spencer, Inc.
BR Boro Typographers, Inc.
BU Howard O. Bullard, Inc.
CC Cooper and Cohen, Inc.
CE Central Linotypers, Inc.
CL Crescent Linotyping Corp.
CO Commanday Bros., Inc.
CR Composing Room, Inc.
CS Composition Service, Inc.
CN Consolidated Production Service, Inc.

New York City
CW Fred. A. Crowell, Inc.
DM Diamant Typographic Service, Inc.
DO Downtown Typesetter, Inc.
EM Empire State Craftsmen, Inc.
ET A. T. Edwards Typography, Inc.
FS Frederick W. Schmidt, Inc.
GL Ganer Linotype Craftsmen
HO F. Hochstadt Co.
HU Hurst Linotypers, Inc.
JE A. O. Jennings, Inc.
JU Judson Type, Inc.
KI King Typographic Service Corp.
KN Kline Linotyping Co., Inc.
LA Lafayette Linotyping, Inc.

New York City
LE Oscar Leventhal, Inc.
MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schirmer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.
BT Baltimore Type & Comp. Corp.

Boston, Mass.
GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

Buffalo, N. Y.
SA Axel E. Sahlin Typog. Service

Chicago
AT American Typesetting Corp.
BS J. M. Bundscho, Inc.
ML M & L Typesetting and Electrotyping Co.
MO Monsen-Chicago, Inc.

Cincinnati, Ohio
FD J. W. Ford Co.

Dayton, Ohio
DA Dayton's Typographic Service

Detroit, Mich.
DT Detroit Typesetting Co.

Philadelphia, Pa.
AJ Alfred J. Jordan, Inc.
JM John C. Meyer & Son
RU Ruttle, Shaw & Wetherill, Inc.
TY Typographic Service, Inc.
VP Armstrong, Walter T., Inc.

Providence, R. I.
TC Typesetting Service Co.

THIS BOOK

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A CUSTOMER is not an outsider to our business—he is part of it.

A CUSTOMER is not a cold statistic—he is a flesh-and-blood human being with feelings and emotions like your own, and with biases and prejudices.

A CUSTOMER is not someone to argue or match wits with. Nobody ever won an argument with a customer.

A CUSTOMER is a person who brings us his wants. *It is our job to handle them profitably to him and to ourselves.*

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GOTHIC SQUARE, Lud
RU: 10-12-14-18-24-30-36-42 (caps only)
KN: 10-14-18-24-30-36-42-48
WR: 12-14-18-24-30-36-42-48-60-72
CW, OB: 14-18-24-30-36-48
HO: 30
JM: 48-60-72

GOTHIC SQUARE HEAVY, Lud
ET: 18-24-30-36-48
HO: 18-24

GOTHIC STYLIST No. 227, Mono
(See Gothic Jefferson—Mono)

GOTHIC TOURIST, Lud
LA: 18-24-30-36-48

GOTHIC TOURIST No. 140, Mono
AT: 6-8 (2 sizes)-10-12-14-18-24-30-36-48-60-72
MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
BT, ML: 6-8-10-12-14-18-24-30-36-42-48-60-72-84
JM: 6-8-10-12-14-18-24-30-36
KI: 8-10-12
JU, RU: 8-10-12-14-18-24-30-36-48-60-72-84
BX, DT: 8-10-12-14-18-24-30-36-42-48-60-72
PT: 10-12-14-18-24-30-36-42-48-60-72-84
TU: 10-12
SC: 8
BS, BU, CO, ET, FD: 14-18-24-30-36-42-48-60-72
MA: 8-10-12-14-18-24-30-36-42-48-60-72-84
AD: 14-18-24-30-36
TY: 48-60-72-84 (caps only)-96
CC: 8-10-12-14-18-24-30-36-42-48-60-72-84-96

GOTHIC TOURIST No. 140-H9, Mono
CC: 14-18-24-30-36-42-48

GOTHIC TOURIST ITALIC No. 1401, Mono
BS: 14-18-24-30-36-42-48-60-72
ML, MO: 14-18-24-30-36-48
AD, AT, ET: 14-18-24-30-36

GOTHIC TOURIST SWASH No. 140, Mono
ML: 14-18-24-30-36-48

GOUDY with Italic, Inter
BU: 14

GOUDY BOLD, Inter
ML: 36 (Caps only)
TH: 6-8-10-12

GOUDY BOLD, Lud
(See No. 11 Bold—Lud)

GOUDY BOLD ITALIC, Lud
(See No. 11 Bold Italic—Lud)

GOUDY BOLD No. 159, Mono
(See Hess Bold No. 159—Mono)

GOUDY BOLD No. 294, Roman and Italic, Mono
AT, BU, DT, FD, MA, ML, MO, PM, PT: 6-8-10-12-14-18-24-30-36-42-48-60-72
CO: 6-8-10-12-14-18-24-30-36-48-60-72
AD PT, JM: 6-8-10-12-14-18-24-30-36
BS: 6-8-10-12-14-18-24
BA, KI, SC, TC, TS: 6-8-10-12
ET: 8-10-12-14-18-24-30-36
BX: 8-10-12-14-18-24-30-36-42-48-60-72
JU: 12-14-18-24-30-36-48
CC: 6-8-10-12 (Roman only)-14-18-24-30-36-42-48

GOUDY BOLD ITALIC SWASH No. 294, Mono
ML: 14-18-24-30-36-42-48-60-72
CO: 14-18-24-30-36-42-48
BU, BX, CC, JM, MA: 14-18-24-30-36
PT: 36

GOUDY BOLD SWASH CAPS No. 294, Mono
FD: 72

GOUDY CURSIVE CAPS No. 324, Mono
BU, BX, CC, CO, JM, ML, PT: 14-18-24-30-36

GOUDY CURSIVE ITALIC SWASH No. 324, Mono
ML: 14-18-24-30-36

GOUDY GIMBEL No. 38, Mono
(See Goudy Light No. 38—Mono)

GOUDY HANDTOOLED No. 383 Roman and Italic, Mono
AT, JU: 10-12-14-18-24-30-36-48-60-72
ML: 10-12-14-18-24-30-36-42-48-(60-72 Roman only)
BU, CO, JM: 10-12-14-18-24-30-36
MO: 10-12-14-18-24-30-36-(48-60-72 Roman only)
DT: 12 (Roman only)-14-18-24-30-36-42-48-60-72
PT: 12-14-18-24-30-36
BT, RU: 12-14-18-24-30-36-48-60-72
CC: 14-18-24-30-36 and 42-48 (Roman only)
FD: 18-24-30-36-42-48-60-72
MA: 10-12-14-18-24-30-36-42 and 60-72 (Roman only)
BX: 10 (Roman only) and 12-14-18-24-30-36

GOUDY HANDTOOLED SWASH No. 383, Mono
BU: 10-12-14-18-24-30-36
BX: 14-18-24-30-36
FD: 72
MA: 14-18-24-30-36-42-48-60-72
CO, JM, ML: 14-18-24-30-36

GOUDY HEAVYFACE No. 380, Mono
BT: 8-10-12-14-18-24-30-36-48-60-72
BS: 12-14-18-24-30-36-42-48-60-72
FD, ML: 14-18-24-30-36-42-48-60-72
JM, SC: 14-18-24-30-36
BU: 60
JU: 60-72

GOUDY HEAVYFACE ITALIC No. 380, Mono
BS: 14-18-24-30-36-42-48-60-72
FD: 14-18-24-30-36-42-48-60
ML: 14-18-24-30-36-42-48

GOUDY HEAVYFACE ITALIC SWASH No. 380, Mono
ML: 14-18-24-30-36

GOUDY HEAVYFACE CONDENSED No. 382, Mono
BS: 12-14-18-24-30-36-42-48-60-72
FD: 12-14-18-24-30-36-42-48-60
AT: 12-14-18-24
ML: 24-30-36-48-60-72

GOUDY INITIALS No. 296, Mono
BU, BX: 60

GOUDY ITALIAN OLD STYLE No. 243, Mono
TS: 8-10-12

GOUDY LANSTON No. 279, Mono
MA: 14-18-24-30-36

GOUDY LIGHT OLD STYLE No. 38, Roman and Italic, (small caps, 6 to 12 pt.), Mono
BT, BU, DT, ML, MO: 6-8--0-12-14-18-24-30-36
BX: 8-10-12-14-18-24
AT, CC, CO, JM, KI, MA, SC, TC, TU: 6-8-10-12
PM: 6-8-10-12 (Roman only)
FS: 8-10

GOUDY LIGHT and ITALIC, Lud
(See No. 11 Light—Lud)

GOUDY LOMBARDIC INITIALS No. 310, Mono
(See Lombardic Caps—Mono)

GOUDY MODERN No. 293 Roman and Italic, Mono
CO: 12-14-18-24-30-36
BU: 12 and 14 Roman only-18-24-30-36
MA: 14-18-24-30-36
BX: 12-14 (Roman only)-18-24-30-36

GOUDY OLD STYLE No. 218, Mono
BU, BX, CO: 42-48

GOUDY OLD STYLE No. 394 Roman and Italic (Small Caps 6 to 12 pt.), Mono
AD, AT, BT, BU, DT, JM, ML, PT: 6-8-10-12-14-18-24-30-36
JU: 6-8-10-12-14-18-24-36 and 42-48 (Roman only)
MA: 6-8-10-12-14-18-24-30-36-42-48
MO: 6-8-10-12-14 (Roman only)-18 and 24-36 (Roman only)
BS, TC: 6-8-10-12
CO: 14-18-24-30-36
BX: 10-12-14-18-24-30-36
CC: 6-8-10 (Roman only)-14-18-24-30-36

GOUDY OLD STYLE ITALIC Swash No. 394, Mono
CC, PT: 14-18-24-30-36

GOUDY OPEN No. 291, Mono
BS: 14-18-24-30-36-72
JU: 14-18-24-30-36
MO: 14-36-72 (caps only)
DT: 18-24-30-36
CC: 14 (Roman only)-18-24-30-36

GOUDY OPEN No. 291 Roman and Italic, Mono
BS, BT, BU, BX, CO, FD, JU, MA, ML: 14-18-24-30-36
JM, PT, RU: 14 (Roman only)-18-24-30-36
MO: 14-18-24-30-36-72
CR, JO, PM: 18-24-30-36

GOUDY TEXT No. 327, Mono
ML: 10-12-14-18-24-30-36
BT, JM, JU, RE, RU: 14-18-24-30-36-48-60-72
BU, CC, CO: 14-18-24-30-36-48
BX, MO: 14-18-24-30-36
MA: 12-14-18-24-30-36-48

GOUDY TEXT No. 327 with Lombardic Initials No. 310, Mono
MA: 12-14-18-24-30-36-48

GRANJON, Lino
KI: 6-8-9-10-11-12-14
RE: 8-10-12-14
CC, MU: 8-10-11-12
VO: 12-14
CE, HA, OB, TE, RU: 18

GRANJON ITALIC, Lino
KI: 6-8-9-10-11-12-14
MU: 8-10-11-12
HA, OB: 18
TE: 18 and 24-30-36-48 (APL)

GRANJON with Italic and Small Caps, Lino
AT: 6-8-9-10-11-12
ML, OB: 8-9-10-11-12-14
CR, ET: 8-10-11-12-14-18
AL: 8-9-10-11-12-14-18-24
JM: 8-10-12-14-18
CE, DT: 8-10-11-12-14
CL: 8-10-11
MO: 8-10-11-12
MA: 8-9-10-11-12
BU: 9-10-11-12
BA, DO: 10
RU: 10-11-12-14
CW: 8-9-10-11-12-14-18

GRANJON SWASH, Lino
OB: 8-9-10-11-12-14
CE: 8-10-11-12-14

GRANJON with Bold, Lino
AT: 6 (fig. only)-11
ML: 10-11-12
BA, BU, OB: 10

GRAPHIC BOLD, Special on Mono
BT, JU: 12-14-18-24-30-36-48

GRAPHIC LIGHT, Special on Mono
BT, JU: 12-14-18-24-30-36-48

GRAPHIC BOLD No. 104, Mono
CR, JM, RU: 12-14-18-24-30-36-48

GRAPHIC LIGHT No. 101, Mono
JM, RU: 12-14-18-24-30-36-48

GRASSET No. 117, Mono
KI: 8

GRECO BOLD No. 100 or No. 326, Mono
AT, BS, BT, JM, JU, ML, RU: 12-14-18-24-30-36
MO: 12-18-24-30-36
BU, BX, CC, CO, PT: 14-18-24-30-36

GRECO BOLD ITALIC No. 100 or 326, Mono
BT, JM, JU, RU: 12-14-18-24-30-36

GREEK PORSON, Lino
KI: 8-10-12

GREEK PORSON No. 155M, Mono
ML: 6
KI 8-10

GREEK VERTICAL No. 83M, Mono
KI: 8-12

GREENWICH (Caps Only), Lud
AB: 36-42-60-72

HADRIANO No. 309, Mono
MO: 12-14-18-24-30
MA: 12-18-24-30-36

HADRIANO STONECUT, Caps No. 409, Mono
RE: 24-30-36

HAUSER SCRIPT, Lud
CR, CW, DT, GR, JM, OB: 24-36-48-60-72
BR, AC, HO, LA, PT, RU: 24-36-48

HEBREW LIGHT, Lino
KI: 6-9-11-12

HEBREW LIGHT ITALIC, Lino
KI: 6-9

HEBREW BOLD, Lino
KI: 11-12-16-18

HESS BOLD No. 159, Mono
BU, DT, ML: 6-8-10-12-14-18-24-30-36
MO: 6-8-10-12-14
CC, SC, TU: 6-8-10-12

HESS BOLD No. 159 Italic, Mono
BU, DT, ML: 6-8-10-12-14-18-24-30-36
AT: 6-8-10-12
JM: 8

HESS OLD STYLE No. 242 with Italic and Small Caps, Mono
TS: 6-8-9-10-11-12

HESS TITLE No. 161, Mono
KI: 8-12
MO: 14-18-24
BX: 8-10 (Roman only)

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AB Abend Typograph Co., Inc.
AD Advertising Agencies Service Co., Inc.
AL Allied Typographers, Inc.
AC Atlantic Linotype Co., Bklyn.
BA M. J. Baumwell, Typography
BX Baxter and Spencer, Inc.
BR Boro Typographers, Inc.
BU Howard O. Bullard, Inc.
CC Cooper and Cohen, Inc.
CE Central Linotypers, Inc.
CL Crescent Linotyping Corp
CO Commanday Bros., Inc.
CR Composing Room, Inc.
CS Composition Service, Inc.
CN Consolidated Production Service, Inc.

New York City

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DM Diamant Typographic Service, Inc.
DO Downtown Typesetter, Inc.
EM Empire State Craftsmen, Inc.
ET A. T. Edwards Typography, Inc.
FS Frederick W. Schmidt, Inc.
GL Ganer Linotype Craftsmen
HO F. Hochstadt Co.
HU Hurst Linotypers, Inc.
JE A. O. Jennings, Inc.
JU Judson Type, Inc.
KI King Typographic Service Corp.
KN Kline Linotyping Co., Inc.
LA Lafayette Linotyping, Inc.

New York City

LE Oscar Leventhal, Inc.
MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schirmer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.

BT Baltimore Type & Comp. Corp.

Boston, Mass.

GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

Buffalo, N. Y.

SA Axel E. Sahlin Typog. Service

Chicago

AT American Typesetting Corp.
BS J. M. Bundscho, Inc.
ML M & L Typesetting and Electrotyping Co.
MO Monsen-Chicago, Inc.

Cincinnati, Ohio

FD J. W. Ford Co.

Dayton, Ohio

DA Dayton's Typographic Service

Detroit, Mich.

DT Detroit Typesetting Co.

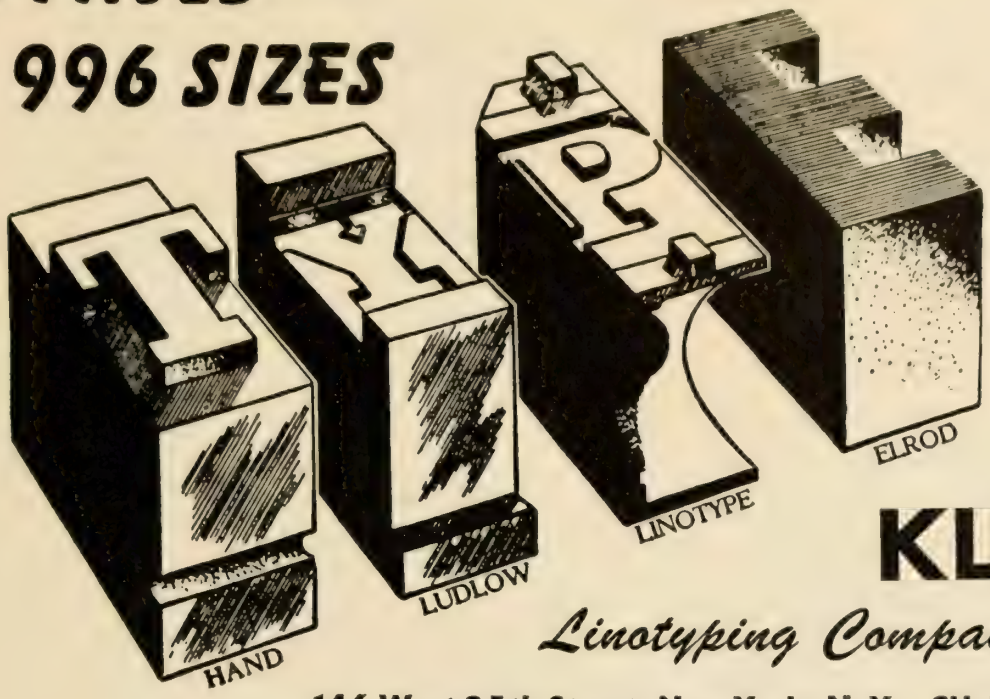
Philadelphia, Pa.

AJ Alfred J. Jordan, Inc.
JM John C. Meyer & Son
RU Ruttle, Shaw & Wetherill, Inc.
TY Typographic Service, Inc.
VP Armstrong, Walter T., Inc.

Providence, R. I.

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HOBO, Inter
BA: 14

HOMEWOOD, Special on Mono
BT, DT, JU, RU: 18-24-30-36-48

IDEAL NEWS with Italic and Small Caps, Inter
CR: 7-8-9
AL, JE: 7
ET, OB, CW: 8
BR: 6

IDEAL NEWS with Bold, Inter
BR, BT: 6
DT: 7½
FS: 8
CW: 9½

IDEAL NEWS with Gothic, Inter
CO: 5½

INITIALS (No. 12) No. 126, Mono
(See Massey Initials No. 126—Mono)

IONIC No. 1, Lino
JM: 5½
BU: 8-10

IONIC with Italics, Lino
TU: 5-5½

IONIC No. 5 with Italic and Small Caps, Lino
TH: 5-6
GL, JM: 5½
TS: 6-6¾-7
FS: 5-5½-6-6½-6¾-7-7½-8
BA, BU: 6½
ET: 6¾-7
LE, ML: 7
AT, MO: 8

IONIC No. 5 with Bold Face No. 2, Lino
BX: 5½
BU: 5½-6½
FS: 6½-7
ET: 6¾-7
GL: 6½-7-8
LE, ML: 7
AL: 6

IONIC No. 56, Mono
KI: 5-6-8
ML: 6-18
NU, SC: 6
TY: 8

IONIC with Century Bold, Lino
JM: 7

IONIC with Ionic Bold, Lino
TU: 6½-6¾-7

IONIC ROUND No. 156 Roman and Italic, Mono
PM: 6
TS: 14-16 (Roman only)
MO: 14 (with small caps)-18-24 (Roman only)
AT: 14-18

ITALIAN OLD STYLE No. 243 Roman and Italic, (Small Caps 6 to 12 pt.), Mono
BT: 6-8-10-12
AT, BU, JM, PT: 8-10-12-14-18-24-30-36
DT, KI, MO, TS: 8-10-12
CO, MA: 14-18-24-30-36
BX: 8-10-12-14-18-24
CC: 8-10-12 (Roman only)-14-18-24-30-36

ITALIAN OLD STYLE Italic Swash No. 243, Mono
JM: 14-18-24-30-36

JANSON with Italic and Small Caps,
CR, KI, TS: 8-9-10-11-12-14
CM, CW, MA, OB, RE: 8-10-11-12-14
JM: 8-10-12-14
MO: 11
RU: 10-11-12
HU: 14
ML: 8-9-10-11-12
VO: 8-9-10-11-12-14 (Roman only)

JANSON No. 401, Mono
BX: 14-18-24-30-36

JANSON No. 401 Roman and Italic (Small Caps 6 to 12 pt.), Mono
CR: 18-24-36
BX: 8-10-12-14-18

JENSON with Scotch Roman, Lino
(See reverse order)

JENSON CONDENSED, Lino
MO: 18

JENSON OLD STYLE No. 58, Mono
KI 10

JOHN HANCOCK No. 142, Mono
KI, MO: 6-8-10-12
AT, ML: 6-8
SC: 6-12

KABEL, Mono
(See Sans Serif series)

KARNAK BLACK, Lud
GR, KN: 12-14-18-24-30-36-48-60
HU: 12-14-18-24-30-36-48
AT, TU: 14-18-24-30-36-42-48-60-72
AL, CW, OB: 14-18-24-30-36-48-60-72
HO: 14-18-24-30-36-48-60
BR, LE: 14-18-24-30-36-48
CE: 18-24-30-36-48-60-72
AB: 12-18-24-36-48
GO, MT: 18-24-30-36-48-60
JE: 18-24-30-36-42-48
AC, CL, DO, ET, LA, PT: 18-24-30-36-48
TC: 18-24-36
JM: 24-30-36-48-60-72
KI: 18-24-36-48-60-72

KARNAK BLACK ITALIC, Lud
AT: 18-24-30-36-42-48-60-72
AL: 18-24-30-36-48-60-72
ML: 18-24-30-36-42
KI: 18-24-30-36
AB, LA: 18-24-36
JM: 48-60-72

KARNAK BLACK CONDENSED, Lud
GR: 14-18-24-30-36-42-48-60-72
CL: 14-18-24-30-36-48-60-72
AL, KN: 14-18-24-30-36-48-72
AT: 14-18-24-30-36-42-48-60
ET: 14-18-24-30-36-48-60
KI: 14-18-24-30-36-42-48
CE, LA: 18-24-30-36-48-60-72
BR, DO, PT: 18-24-30-36-48
TU: 18-24-30-36-42-48-60-72
ML: 72
HO: 120
MT: 24-30-36-48
JM: 48-60-72

KARNAK BLACK CONDENSED ITALIC, Lud
DT: 14-18-24-30-36-42-48-60-72
RE: 14-18-24-30-36-48-60
TU: 18-24-30-36-42-48-60-72
AB: 18-24-36-42-60

KARNAK BOLD, Lud
CL: 6-8-10-12-14-18-24-30-36-48
OB: 14-18-24-30-36-48
CR: 18-24-30-36-42-48

KARNAK LIGHT, Lud
CL: 6-8-10-12-14-18-24-30-36
AB: 8-10-12-14-18-24-36-48
CW, OB: 14-18-24-30-36-48
AL, DO, ET, HO, HU, KN: 18-24-30-36-43
LA, MT: 18-24-30-36
GR: 18-24-36-48
AC: 18-24-36
CE, JM: 24-30-36-48-60-72
TC: 24-30-36-42-48
CR, JE: 18-24-30-36-42-48
LE: 18-24-30

KARNAK MEDIUM, Lud
KN: 12-14-18-24-30-36-48-72
AT: 14-18-24-30-36-42-48-60-72
DO, ET, GR, HU, LA, LE: 18-24-30-36-48
AL, HO: 18-24-30-36-48-60-72
TC: 18-24-30-36-42-48
RS: 18-24-36-42-48
JE: 18-24-30-36-42
AC: 18-24-36
KI: 18-24-30-36
ML: 24
CE, JM: 24-30-36-48-60-72
MT: 24-30-36-48-60
AB: 6-8-10-12-14-18-24-30-36-48-60
BR: 24-30-36
CW: 14-18-24-30-36-48

KARNAK OBELISK, Lud
AT: 14-18-24-30-36-42-48-60-72
AL: 14-18-24-30-36-48-60-72
KN: 18-24-30-36-48-72
JE: 18-24-30-36-42-48
LA: 18-24-30-36 (with alt. characters)
DO: 18-24-30-36
MT, PT: 24-30-36-48
JM: 48-60-72

KENNERLEY, Inter
AT: 18
CN: 8-10-12-14

KENNERLEY BOLD No. 269, Mono
AD, BU, BX, DT, JM, PT: 6-8-10-12-14-18 (2 sizes)-24-30-36
BT, JU, RU: 6-8-10-12-14-18 (2 sizes)-24-30-36-48-60-72
MA: 6-8-10-12-14-18-20-24-30-36-42-48-60
CO: 14-18-24-30-36
CC: 6-8-10-12-14-16-18-24-30-36

KENNERLEY BOLD ITALIC No. 269, Mono
BT, BU, BX, JM, RU: 6-8-10-12-14-18 (2 sizes)-24-30-36
DT: 6-8-10-12-14-18 (2 sizes)
MA: 6-8-10-12-14-18-20-24-30-36
CC: 14-16-18-24-30-36

KENNERLEY BOLD SWASH No. 269, Mono
JM: 14-18 (2 sizes)-24-30-36

KENNERLEY OLD STYLE No. 268 Roman and Italic (Small Caps 6 to 12 pt.), Mono
DT, FD, RU: 6-8-10-11-12-14-16-18 (2 sizes)-24-30-36 and 48-60-72 (Roman only)
ML: 6-8-10-12-14-18 (2 sizes)-24-30-36 and 42-48-60-72 (Roman only)
AT: 6-8-10-12-14 and 18 (also small caps)-24-30-36-42-48 (Roman only)
BT: 6-8-10-12-14-18-24-30-36 and 48-60-72 (Roman only)
BU: 6-8-10-12-14-18 (2 sizes)-24-30-36-48 (Roman only)
PT: 6-8-10-12-14-16 (2 sizes)-24-30-36
PM, TH: 6-8-10-12-14-18-24-30-36
BS, JM: 6-8-9-10-12-14-18 (2 sizes)-24-30-36
CO: 6-8-10-12-14-18-24-30-36-48
TS: 6-8-9-10-11-12
AJ, AT, BA, FS, KI, TC, VP: 6-8-10-12
AD: 6-8-10-11-12-14-18 (2 sizes)-24-30-36
MA: 6-8-10-12-14-18-20-24-30-36 and 42-48-60-72 (Roman only)
TY: 6-8-10-12-14-18
MO: 6-8-10-11-12-14-18-24-30-36
JU: 8-10-12-14-18-24 and (Roman)-30-36-48-60-72
TU: 6-8-10-12
BX: 6-8-10-12-14-18 (2 sizes)-24-30-36-42-48-60-72
CC: 6-8-10-12 (Roman only)-14-16-18-24-30-36 and 48 (Roman only)

KENNERLEY OLD STYLE Swash No. 268, Mono
DT, FD, ML, MO: 10-12-14-18-24-30-36
JM: 14-18 (2 sizes)-24-30-36
CC: 14-16-18-24-30-36
MA: 14-18-24-30-36

KENNTONIAN, Inter
AC: 6-8-10-12-14
HU: 8-10-12-14
AT, ML, OB: 18
CC: 6-8-10-12-14-18

KENNTONIAN with Italic and Small Caps, Inter
AL, CW, JM, PT, TC: 6-8-10-12-14-18
OB: 6-8-10-12-14-18 (no small caps)
FD, LE, ML, MO: 6-8-10-12-14
AB, CE, RU: 6-8-10-12
CR, DO, ET, HU, RS, TE, TH, WR: 8-10-12-14
CO: 8
FS: 8-10-12

KENNTONIAN with Cloister Bold, Inter
JM: 6-8-10-12-14-18
AT, FD: 6-8-10-12-14
CL, ML, RU: 8-10-12-14
AB: 8-10-12
FS, TH: 8-10
DO: 10

LAFAYETTE EXTRA CONDENSED, Lud
LA: 18-24-36-48

LAW with Italic and Small Caps, Lino
HO: 11

LAW ITALIC No. 23, Mono
MO: 6-8-10-12

LAW ITALIC No. 115, Mono
PM: 6-8-10-12
BX, MA: 8-10-12
MO: 10

LINING LATIN CONDENSED No. 247,
RE: 30-36

LINING LITHO LIGHT, Lud
AB: 6-12 (3 sizes each)

LINING PLATE GOTHIC, Lud
(See Gothic Lining Plate)

LINO INITIALS, Lino
WR: 20-24

LINO SCRIPT, Lino
WR: 18

LINO TEXT, Lino
GL: 12

LITHO ROMAN LIGHT No. 162,
BT, MO: 6-8-10-12

LOMBARDIC CAPS No. 310, Mono
BT, JM, JU, MO, RU: 18-24-30-36-48-60-72
BU, BX, CC, CO, PT: 18-24-30-36
TC: 24-30-36-48-60-72
ML: 30-42-48-60-72

LORIMER with REMSON BOLD, Lino
AB: 10

LOTUS, Inter
GR: 10-12-14

LUDLOW BLACK, Lud
HO: 10-12-14-18-24-30-36-42-48
CL, JE: 12-14-18-24-30-36-48

New York City
- **AB** Abend Typograph Co., Inc.
- **AD** Advertising Agencies Service Co., Inc.
- **AL** Allied Typographers, Inc.
- **AC** Atlantic Linotype Co., Bklyn.
- **BA** M. J. Baumwell, Typography
- **BX** Baxter and Spencer, Inc.
- **BR** Boro Typographers, Inc.
- **BU** Howard O. Bullard, Inc.
- **CC** Cooper and Cohen, Inc.
- **CE** Central Linotypers, Inc.
- **CL** Crescent Linotyping Corp.
- **CO** Commanday Bros., Inc.
- **CR** Composing Room, Inc.
- **CS** Composition Service, Inc.
- **CN** Consolidated Production Service, Inc.

New York City
- **CW** Fred. A. Crowell, Inc.
- **DM** Diamant Typographic Service, Inc.
- **DO** Downtown Typesetter, Inc.
- **EM** Empire State Craftsmen, Inc.
- **ET** A. T. Edwards Typography, Inc.
- **FS** Frederick W. Schmidt, Inc.
- **GL** Ganer Linotype Craftsmen
- **HO** F. Hochstadt Co.
- **HU** Hurst Linotypers, Inc.
- **JE** A. O. Jennings, Inc.
- **JU** Judson Type, Inc.
- **KI** King Typographic Service Corp.
- **KN** Kline Linotyping Co., Inc.
- **LA** Lafayette Linotyping, Inc.

New York City
- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

Baltimore, Md.
- **BT** Baltimore Type & Comp. Corp.

Boston, Mass.
- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.
- **SA** Axel E. Sahlin Typog. Service

Chicago
- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

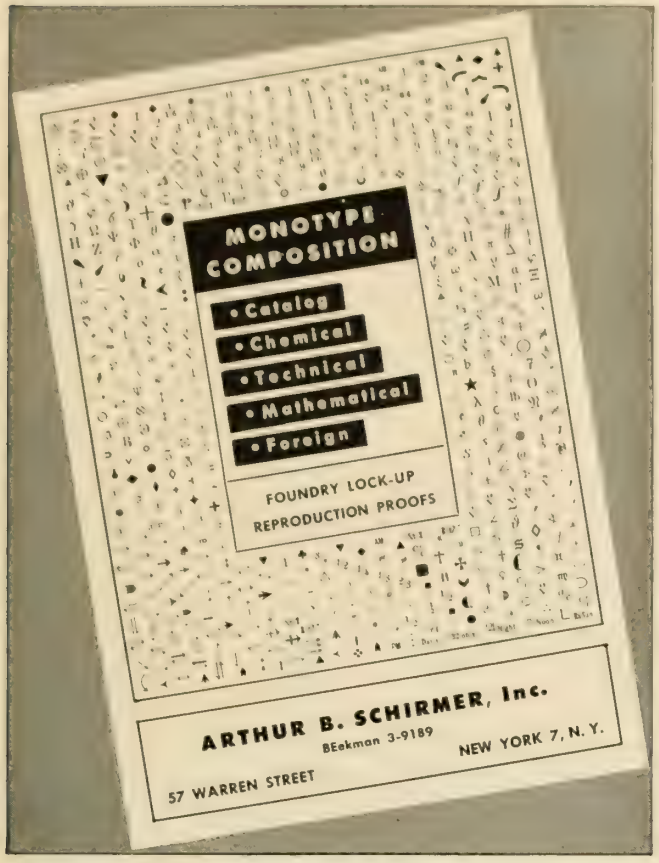
Cincinnati, Ohio
- **FD** J. W. Ford Co.

Dayton, Ohio
- **DA** Dayton's Typographic Service

Detroit, Mich.
- **DT** Detroit Typesetting Co.

Philadelphia, Pa.
- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

Providence, R. I.
- **TC** Typesetting Service Co.



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ANSWERS TO QUIZ ON PAGE 507

1. a — Caslon 540; R — Flash; E — Lucian; Y — Old Face Open (Stephenson, Blake); O—Legend; U—Franklin Gothic Condensed; b — Garamond Bold; R — Prisma; i — Lydian Italic; G — Bulmer; h — Lucian; t — Brush; W — Corvinus Medium; i — Caslon Heavy; T—Century Schoolbook; H—Beton Medium Condensed; T—Onyx; Y—Weiss Italic; P—Balloon Extra Bold; e—Alternate Gothic No. 1; ?—Bodoni Bold Italic. **2.** Six-plus; compare, e.g., 60 picas with 10 inches. **3.** 21pt—Caslon Old Face, Linotype; 13½pt—Fournier, English Monotype; 66pt — Weiss Initials, Bauer. **4.** Bulmer. **5.** Capitals are too heavy for lower-case, causing a heavy stripe down the left side. **6.** No. Letter-spacing is used to effect an even color throughout a display line, and this should be attempted in lower-case as well as capitals. **7.** The lower-case g, because of its complexity. **8.** Because most slug machines' measures do not extend beyond 42 picas, and butted slugs would have to be used. **9.** Yes. Hair spaces are supplied down to .0035". **10.** Monotype. **11.** The light weight of the hyphen would make the line appear indented. **12.** Typewriters in general use measure 2 characters to a pica. **13.** fi, ü (in German), ç, ö (in English), Wo, ... , &. **14.** Yes, in linotype. **15.** Caslon Oldstyle No. 471. **16.** 3-to-an-em, there being 3 such units to 1/M of space. **17.** Bauer Bodoni. **18.** A small-faced type, or a letter with short descenders, will cast on a body smaller than its listed size and still show entire. **19.** Legend, Primitive, Parisian, Hobo, Fell (Oxford University Press), Regal, Phyllis, Park Avenue. **20.** Elizabeth: the 1st s, the 2nd o, the 3rd e, the 4th s. Bodoni Book: the m, the 2nd u, the 2nd h, the 4th c.

EMPIRE STATE CRAFTSMEN, INC.
115 E. 23rd Street, N. Y. 10 · GR. 7-3373

LUDLOW BLACK, Lud
RU: 12-14-18-24-36
WR: 12-18-24-36-48
CE, LE, OB: 14-18-24-36-48
AL: 14-18-24-30-36-48
KI: 18-24-30-36-42-48-60-72
CW, TC: 18-24-36-48
GL: 18-24-30-36-48

LUDLOW BLACK ITALIC, Lud
AL: 14-18-24-30-36-48
WR: 12-18-24-36

LYDIAN with Italic, Special on Mono
ML: 12-14-18-24-30-36

M & L CURSIVE, Special on Mono
ML: 6-8-10-12-14-18-24-30-36

MacFARLAND No. 68, Mono
KI: 6-8-10-12
MO: 6

MANDATE, Lud
AL, CE, GO, JM, MT: 18-24-30-36-48-60-72
CL, CW, OB, WR: 18-24-36-48-72
KN: 18-24-36-48-60-72
HU: 18-24-36-48-60
RU: 18-24-30-36-48
AB, AC, ET, HO, LA, PT: 18-24-36-48
GR: 18-24-36-48-60
CR: 24-36-48-72
JE, TC: 24-36-48

MARLBOROUGH, Special on Mono
MA: 18

MASSEY INITIALS No. 126, Mono
MO: 36

MASTERMAN No. 158, Mono
DT: 6-8-10-12-14-18-24-30-36
KI: 5

MAYFAIR CURSIVE, Lud
AB: 14-18-24-36
HO, SL: 14-18-24-36-48
CW, JM, OB: 18-24-36-48-60-72
GR: 18-24-30-36-48-60
AL: 18-24-30-36-48
BR, LA, LE: 18-24-36-48
WR: 24-36-48-60-72
AC: 18-24-36
MT: 24-30-36-48

MEDIEVAL WITH ITALIC, Inter
TU: 10

MEMPHIS BLACK with Italic, Lino
CW, HO: 8-10-12

MEMPHIS BOLD, Lino
BR, CC, TU: 6-8-10-12-14-18
CR, TH: 6-8-10-12-14
EM, HU, MC: 8-10-12-14-18
CS: 8-10-12-14
ML: 18
TE: (24-30-36-48-60-72 APL)
TU: (24-30-36-42-48-60-72-84-96-120 APL)

MEMPHIS BOLD with Italic, Lino
PT: 6-8-10-12-14-18
HC, TH: 6
BU, DM: 6-8-10-12-14
CS: 8-10
BA, CR: 8-10-12-14

MEMPHIS BOLD CONDENSED, Lino
CR: 10-12

MEMPHIS EXTRA BOLD, Lino
CC, EM: 8-10-12

MEMPHIS EXTRA BOLD with Italic, Lino
AL, FS, JM, LA, TH: 8-10-12-14
DT: 8-10
LE, OB: 8-10-12
WR: (APL, Roman only) 24-30-36-48-72-96-120-144

MEMPHIS EXTRA BOLD CONDENSED, Lino
TE: 24-30-36-48 (APL)

MEMPHIS LIGHT, Lino
CC, TU: 6-8-10-12-14-18
BR, CR, EM: 6-8-10-12-14
CS, HU, TH: 8-10-12-14
MU: 18-24-30-36

MEMPHIS LIGHT with Italic, Lino
PT: 6-8-10-12-14-18
GL: 6
TS: 6-8-10-12

MEMPHIS LIGHT with Bold, Lino
GL: 6-8-10-12-14-18; (APL) 30-36-42-48-60-72-84-96-120
WR: 6-8-10-12-14-18; (APL) 24-30-36-48-72 (Roman only)
AB, BR, HO, LA, ML, OB: 6-8-10-12-14
HU, MO: 6-8-9-10-12-14
CE, RU, TE: 6-8-10-12-14-18
TS: 6-8-10-12
ET, JE: 8-10-12-14

MEMPHIS MEDIUM WITH BOLD Lino
BA: 6

MEMPHIS MEDIUM with Italic and Small Caps, Lino
ET, ML, PT, RE, TE: 6-8-10-12-14-18
EM: 6-8-9-10-12-14
BR, BU, CC, CS, CW, FS, GL, HO, LA, MO, OB, RU, TH, TU: 6-8-10-12-14
CO, JE, TS: 6-8-10-12
CR, MT: 6-8-9-10-12-14-18
CE, HU, WR: 8-10-12-14
DT: 8-10
BA, MA, LE: 8-10-12
AB: 8-10-12 and 18 (Roman only)
VO: 6-8-9-10-12

MEMPHIS MEDIUM CONDENSED with Extrabold, Lino
LA: 8-10-12-14
CR: 10-12

MEMPHIS MEDIUM CONDENSED with Extrabold Cond., Lino
ML: 18-24

METROBLACK No. 2, Lino
ML: 30-36
KI: 6-8-10-12-14
DT: 18-24
TE: 18-24-36-48 (APL)

METROBLACK No. 2 with METROLITE, Lino
OB: 6-8-10-12-14
WR: 6-8-10-12-14-18
MT: 6
ML: 8-10-12-14
DT: 12-14
AT: 10

METROLITE No. 2, Lino
KI: 6-8-10-12-14

METROLITE with Black, Lino
MT: 6
CW: 6-8-10-12-14

METROLITE with EXTRA BOLD, Lino
AB: 6-8

METROMEDIUM No. 2, Lino
KI: 6-8-10-12-14
BU: 6-8
OB: 8-10-12
TE: 18-24-30-36-48 (APL)

METROMEDIUM No. 2 with Italic, BT: 10-12-14-18

METROTHIN No. 2, Lino
BU, CR: 6-8
KI: 6-8-10-12-14

METROTHIN No. 2 with METROMEDIUM, Lino
WR: 6
ML: 10
CW, OB: 8-10-12

Minuet, Inter
GR: 10-12-14

MODERN—(See also Numbered faces)

MODERN ANTIQUE No. 26, Mono
(See Antique Modern—Mono)

MODERN CONDENSED No. 1 Roman and Italic (Small Caps 6 to 12 pt.), Mono
BT, MA, ML, MO, PM: 6-8
AT, BU, CO, DT, KI: 6
SC: 6 (no Italic)
JM: 6-8-10
TU: 6 (Roman only)
BX: 5-6-7-8-10-11-12

MODERN EXTENDED No. 5, Mono
(See Post Text No. 5—Mono)

MODERN No. 3 EXTRA CONDENSED No. 216, Mono
ML: 8

MODERN CONDENSED GOTHIC No. 140, Mono
(See Gothic Tourist—Mono)

MODERN No. 150 with Italic, Mono
MA: 6-10-12

MODERN No. 8 Roman and Italic (Small Caps 6 to 12 pt.), Mono
AJ: 5-6-7-8-10-12
MO: 4-4½-5-6-7-8-9-10-11-12-14-18
BS: 4½-5-6-7-8-9-10-11-12
AT: 4½-5-6-7-8-9-10-11-12-14-18
CO: 4½-5-6-7-8-10-12
BX, JM, KI, MA: 5-6-7-8-9-10-11-12
DT: 5-6-8-10-12 and 14-18 (Roman only)
PM: 5-6-8-10-12 (Roman only)
BU: 5-6-8-10-11-12
CC, PT: 5-6-7-8-9-10
TS: 5
ET: 5-6-8-10-12
TY: 6-7-8-10
AJ: 6-8-10-12
BT: 6-8-10-11-12
ML: 4-4½-5-6-7-8-9-10-11-12-14-18 (Roman only)
SC: 8-9-10-11

MODERN (No. 4) No. 34, Mono
BU: 8-10
PM: 8
MA: 8-9-10-11
AT: 8-11
JM: 10

MODERN (No. 4) ITALIC No. 34, Mono
ML: 11
MA: 8-9-10-11

MODERN No. 8, Mono
AT: 6-8
TU: 8 (Roman and Italic)

MODERN ITALIC No. 9, Mono
AT: 4½-5-6-7-8-10-12

MODERN No. 13, Mono
(See also Gothic No. 13—Mono)
MO: 8

MODERN MEDIUM CONDENSED No. 14, Mono
AT, DT, JM, MO: 8
ML: 8-12

MODERN MEDIUM CONDENSED ITALIC No. 14, Mono
ML: 12

MODERNISTIC No. 297, Mono
BU, BX, CO, JM, JU, ML: 18-24-30-36
MO: 18-24-30-36-48-60-72
WR: 24-30-36

MONSEN LIGHT CONDENSED No. 472, Mono
MO: 7

MONSEN MEDIUM CONDENSED No. 813, Mono
MO: 7

NARCISS, Lino
CR, OB: 12-14
TC: 10-12
AL: 14

NARCISS No. 112, Monotype-Thompson
MA: 8-10-12-14-18-24-30-36-48
BU, BX, CO: 48

NICHOLAS COCHIN No. 461, Mono
MO: 14-18-24-30-36
CC: 14-16-18-24-36
BU, CO, PT: 14-18-24-36
BX: 14-18 (2 sizes)-24-36

NICOLAS COCHIN ITALIC No. 461, Mono
BU: 14-18-24-36

NICOLAS COCHIN BOLD No. 105, Special on Mono
JM: 12-14-18 (2 sizes)-24-30-36-48
BT, JU: 12-14-18-24-30-36-48

NICOLAS JENSON, Lud
(See Eusebius)

No. 1 with Italic and Small Caps, Lino
BU: 6-7-8-11
GL: 6-11
CR: 6
JM, ML: 7
RU: 7-10-11
DT: 8-10-11
HO, MA: 11

No. 1 with Antique No. 2, Lino
JM: 5½
MA: 6

No. 1 with Bold Face No. 1, Lino
BT: 7

No. 1 with Bold Face No. 2, Lino
BX, RU, TU, WR: 6
BT: 6-7
BU, GL, ML: 6-8

No. 1 with Bold Face No. 2, Inter
FS, LE: 6

No. 1 with Clarendon No. 1, Lino
BU, JM, RU: 5½

No. 1 with Gothic No. 4 ,Lino
AT: 5
BU, CW, JE: 7

No. 1 with Gothic Condensed, Lino
JM: 5

No. 1 with Title Bold, Lino
JM: 6-7

No. 2 with Italic and Small Caps, Inter
AT: 6-8

No. 2 with Italic and Small Caps, Lino
ET: 5½
CR: 5½-6
CO, ML: 6
JM: 6-7
HO: 6-8
BU, MA, RU: 8

No. 2 with Antique No. 2, Inter
AT: 6

No. 2 with Antique No 2, Lino
MA: 5½
AT, BU, ML, PT: 6

No. 2 wtih Bold Face No. 1, Inter
AT: 6-8
AL, FD, LE: 6

New York City
- **AB** Abend Typograph Co., Inc.
- **AD** Advertising Agencies Service Co., Inc.
- **AL** Allied Typographers, Inc.
- **AC** Atlantic Linotype Co., Bklyn.
- **BA** M. J. Baumwell, Typography
- **BX** Baxter and Spencer, Inc.
- **BR** Boro Typographers, Inc.
- **BU** Howard O. Bullard, Inc.
- **CC** Cooper and Cohen, Inc.
- **CE** Central Linotypers, Inc.
- **CL** Crescent Linotyping Corp.
- **CO** Commanday Bros., Inc.
- **CR** Composing Room, Inc.
- **CS** Composition Service, Inc.
- **CN** Consolidated Production Service, Inc.

New York City
- **CW** Fred. A. Crowell, Inc.
- **DM** Diamant Typographic Service, Inc.
- **DO** Downtown Typesetter, Inc.
- **EM** Empire State Craftsmen, Inc.
- **ET** A. T. Edwards Typography, Inc.
- **FS** Frederick W. Schmidt, Inc.
- **GL** Ganer Linotype Craftsmen
- **HO** F. Hochstadt Co.
- **HU** Hurst Linotypers, Inc.
- **JE** A. O. Jennings, Inc.
- **JU** Judson Type, Inc.
- **KI** King Typographic Service Corp.
- **KN** Kline Linotyping Co., Inc.
- **LA** Lafayette Linotyping, Inc.

New York City
- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

Baltimore, Md.
- **BT** Baltimore Type & Comp. Corp.

Boston, Mass.
- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.
- **SA** Axel E. Sahlin Typog. Service

Chicago
- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

Cincinnati, Ohio
- **FD** J. W. Ford Co.

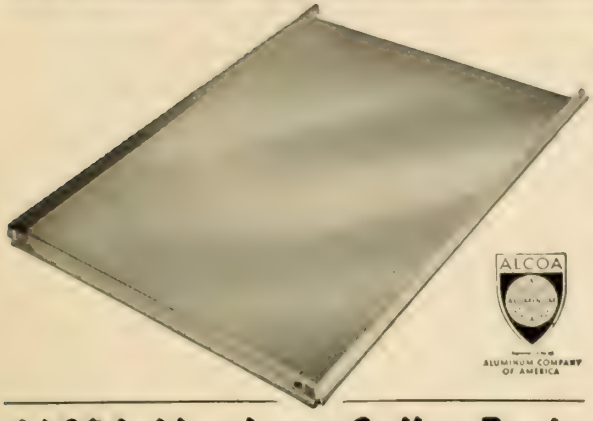
Dayton, Ohio
- **DA** Dayton's Typographic Service

Detroit, Mich.
- **DT** Detroit Typesetting Co.

Philadelphia, Pa.
- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

Providence, R. I.
- **TC** Typesetting Service Co.

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- ★Grooved sides, spot welded corners for rigidity
- ★Strong as steel—⅔ lighter
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100..	49¢ ea.	65¢ ea.	75¢ ea.	60¢ ea.	65¢ ea.	75¢ ea.
500..	45¢ ea.	60¢ ea.	70¢ ea.	57¢ ea.	60¢ ea.	70¢ ea.

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SEE PAGES 358-360 FOR TABLES SHOWING TIME AND COSTS

No. 2 with Bold Face No. 1, Lino
CR, ET, MA: 5½
AB, DE, DT, HO, MO: 6
ML: 6-7
BU, CO: 6-7-8
TU: 6-8
CW: 7

No. 2 with Bold Face No. 2, Inter
AL, DT: 5½
LE: 6
AT: 7-8

No. 2 with Bold Face No. 2, Lino
AB, CW, FD: 5½
AT, BU: 5½-6
ML: 5½-7
ET: 6
MO: 7

No. 2b with Bold Face No. 2b., Lino
BU, MA: 5½

No. 2 with Condensed Title, No. 3, Lino
AB: 8

No. 2 with Gothic No. 3, Inter
AT, MA: 6-8
CO: 7
RS: 8
BX: 6

No. 2 with Gothic No. 3, Lino
TH: 5
CW, RU: 6
BU, JE, ML: 6-7-8
JM, OB: 6-8
DT: 6-8-10
GL, PT, TU: 7
CO: 10 (caps only)
BX, CW: 8

No. 2 with Italic, Lino
AT: 6-8

No. 2 with Title Condensed No. 3, Inter
AL: 5
AT: 8

No. 4 with Bold Face No. 2 Condensed, Lino
CO: 5½

No. 9 with Italic and Small Caps, Lino
BU: 11

No. 10 with Italic and Small Caps, Lino
AB, CC, CO, LE, TS: 5
WR: 6 (Roman only)

No. 10 with Gothic No. 4, Inter
AL, FS, LE, RS, RU: 5
AT: 6

No. 10 with Gothic No. 4, Lino
BU, BX, CO, CR, CS, CW, DM, DT, ET, FD, GL, HO, LE, MO, PT, RU, TS, TU: 5
JE, ML: 5-6

No. 11 with Gothic Condensed No. 4, Lino
HO, MA: 5½
FD, TU: 5½-6
BU, DT, JE, LE, ML, MO: 6

No. 11B with Gothic Condensed No. 4B, Lino
CW: 6

No. 11 with Gothic No. 4, Inter
MO: 6

No. 11 LIGHT, Lud
AB: 6-8-10-12-14-18-24
AC: 12-18-24-36
AL: 14-18-24-30-36-42-48
CE, CW, OB, RU, TC: 18-24-30-36-48
RS: 18-24-30-36-42-48
JE: 18-24-30-36
HO: 18-24-30-36-42

No. 11 LIGHT ITALIC, Lud
AC: 12-18-24-36
AL: 14-18-24-30-36-42-48
CW, OB: 18-24-30-36-42-48
RS, RU: 18-24-30-36-48
TC: 24-36-48

No. 11 BOLD, Lud
AB: 6-8-10-12-14-18-24
WR: 12-14-18-24-30-36-48
GR: 14-18-24
RS: 14-18-24-30-36-42-48
OB: 14-18-24-30-36-48
CR: 14-18-24-30-36-42-48-60-72
AL, CW: 14-18-24-30-36-48-60-72
HU: 18-24-30-36-42-48-60-72
CE: 18-24-30-36-48-60-72
HO, LE, RU: 18-24-30-36-48
TC: 18-24-36-48
SL: 18-24-36
JE: 18-24-30-36
CW: 18-24-30-36-42-48

No. 11 BOLD ITALIC, Lud
WR: 12-14-18-24-30-36-48
AL, CR, RS: 14-18-24-30-36-48
HU: 18-24-30-36-42-48-60-72
OB: 18-24-30-36-42-48
HO, LE, RU: 18-24-30-36-48
CE: 18-24-30-42
JE: 18-24-30-36-42
TC: 24-36-48

No. 12 with Italic, Lino
CC, WR: 6

No. 12 with Gothic No. 4, Lino
LE: 5

No. 12 with Gothic No. 8, Lino
BU, ML, PT: 6

No. 12 with Gothic No. 11, Inter
CO, ML: 7

No. 13 with Italic and Small Caps, Lino
BU: 9-10

No. 16 with Italic and Small Caps, Inter
RS: 10

No. 16 with Century Bold, Lino
BU: 10-14
WR: 8 (11 No. 16 only)

No. 17 with Title Condensed No. 5, Lino
RU: 8
CW: 6

No. 18 with Antique Black No. 1, Lino
AL, ML: 5

No. 19 with Italic and Small Caps, Lino
BU, CO: 8

No. 21 with Italic and Small Caps, Lino
RU: 10-11
BU: 9
ET: 8-10
DT: 8
ML: 8-9-10-11
MA: 7-8-9-10-11-12

No. 26 with Doric, Inter
LC: 6

No. 28 with Antique Black No. 1, Lino
BU, DE: 8

No. 28 with Gothic, Lino
MA: 10

OBELISK, Lud
See Obelisk (Lud)

OLD ENGLISH No. 95, Mono
MA: 10-12-14-18-24-30-36

OLD ENGLISH, Inter
KN: 8-10-12-14-18-24-30-36-48

OLD ENGLISH, Lino
WR: 8-10-12-14
GR: 10

OLD ENGLISH, Lud
AB: 8-10-12-14-18-24-36
HO: 8-10-12-14-18-24-30-36-48
CE: 10-12-14-18-24-36-48
WR: 10-12-18-24-36-48
CL: 12-14-18-24-36
AL: 12-18-24-36
GR: 12-14-18-24-30-36-48
AC, LA: 12-14-18-24-36-48
HU: 14-18-30-36

OLD STYLE No. 1, Lino
LE: 12
CC: 6-8-9-10-11-12

OLD STYLE No. 1 with Italic and Small Caps, Inter
AL: 6-8-10-11-12
AC, AT, DO, RS: 6-8-10-12
CL, KN, MT, PT: 6-8-10
CS: 8-10
MO: 8-9-10
BX: 6-8-9-10

OLD STYLE No. 1 with Italic and Small Caps, Lino
BU, JM, RU: 6-7-8-9-10-11-12
MA, OB: 6-8-9-10-11-12
BT, CW, GL: 6-8-9-10-12
TC: 6-8-10-12-14
DT, ML, PT: 6-8-9-10-11
CE, MT: 6-8-10
BR, CO, EM, LE: 6-8-9-10
HO, TE, TU: 6-8-10-12
CR: 6-8-10-11
JE: 6-7-8-10
AT: 6-8-12
WR: 6 (Roman only)-8-9-10-12
ET, FS: 7-8-10-12
MO: 8-9-10
HU: 8-10
LA: 8-12
BX: 11

OLD STYLE No. 1, with Antique No. 1, Lino
CE, CO, CS, HO, JE, LE, OB, PT: 6-8-10-12
BU: 6-8-10-11-12-14
DT, LA, MO: 6-8-10-12-14
JM: 6-8-10-11-12
AB: 6-8-9-10-12
ML: 6-8-9-10-11-12
GL: 6-8-10
AT: 6-8
RU: 8-10-11
HU, WR: 8-10
BA: 10
MA: 8-10-11-12

OLD STYLE No. 1 with ANTIQUE Italic, Lino
LA: 8-10

OLD STYLE No. 1 with Antique No. 1, Inter
MO: 6-8-10-12-14
KN, RS: 6-8-10-12
CL: 6-8-10
AL: 8-10
DO: 8-10-12-14
AT: 10-11-12

OLD STYLE No. 1 with Cheltenham Bold, Lino
TC: 6-8
GR: 6
DT: 6-10
BU: 8-10-12-14
ML: 8

OLD STYLE No. 1 with Cheltonian bold, Inter
OB: 6-8
RS: 8-10-12

OLD STYLE with Italic and Small Caps, Lino
AB: 6-8-9-10

OLD STYLE No. 1 with Title No. 1, Lino
BU: 6
ML: 6-8
DO: 8
MA: 8-10

OLD STYLE No. 1 with Title No. 2, Lino
BU: 6

OLD STYLE No. 7 with Italic and Small Caps, Lino
ML: (Old Style and Modern figs.) 6-7-8-9-10-11-12
HU: 6-7-8-10-10½-11
MA: 6-7-8-10-11-12-14
ET, GL, TU: 6-8-9-10-11
CC, GR, PT: 6-8-10-12
CS: 7-8-9-10-11-12
WR: 7-8-10½-12
OB: 8-9-10-11
JM: 8-9-10½-12
CR, TS: 9
FS: 10
RU: 8-9-10-10½-11-12

OLD TOWNE, Caps, Special on Mono
RE: 30

ONYX, APL
TU: 24-30-36-42-48-60-72

ONYX No. 404, Mono
TC: 18-24-30-36-48-60-72-96
RU: 18-24-30-36-48-60-72-84
JM: 18-24-30-36-48-60-72
ET: 18-24-30-36
FD: 24-30-36-42-48-60-72-84
ML, MO: 24-30-36-48
BT, JU: 24-30-36-48-60-72-84
BU, BX, CC, CO, RE: 24-30-36-42-48-60-72
AD: 24-30-36
DT: 36-48
CW: 24-30-36-48-60

ONYX ITALIC No. 404, Mono
BU, CR, DT, MO, RE: 24-30-36-42-48-60-72
CC: 24-30-36-42-48-60
BX: 24-30-36-48-60-72

ORIGINAL OLD STYLE with Italic and Small Caps, Lino
BU: 6
BA: 12

OUTLINE, CONDENSED, Lino
HO: 12

PABST EXTRA BOLD with Italic, Lino
DT: 10-12-18 (Roman only)-24 (caps only)
LA: 12
CW, OB: 14

PABST OLD STYLE with Italic, Lino
AL: 10-12-14-18

PABST OLD STYLE No. 45, Mono
MO: 6-8-10-12-14-18-24-30-36
BU: 6-8-10-12-14-18
ML: 8-10-12-24
KI: 12

PAGODA, Special on Mono
RE: 18-36

PARAGON with Bold, Lino
TS: 6-8

PARAGON with Italic and Small Caps, Lino
TS: 8

New York City

AB Abend Typograph Co., Inc.
AD Advertising Agencies Service Co., Inc.
AL Allied Typographers, Inc.
AC Atlantic Linotype Co., Bklyn.
BA M. J. Baumwell, Typography
BX Baxter and Spencer, Inc.
BR Boro Typographers, Inc.
BU Howard O. Bullard, Inc.
CC Cooper and Cohen, Inc.
CE Central Linotypers, Inc.
CL Crescent Linotyping Corp.
CO Commanday Bros., Inc.
CR Composing Room, Inc.
CS Composition Service, Inc.
CN Consolidated Production Service, Inc.

New York City

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DO Downtown Typesetter, Inc.
EM Empire State Craftsmen, Inc.
ET A. T. Edwards Typography, Inc.
FS Frederick W. Schmidt, Inc.
GL Ganer Linotype Craftsmen
HO F. Hochstadt Co.
HU Hurst Linotypers, Inc.
JE A. O. Jennings, Inc.
JU Judson Type, Inc.
KI King Typographic Service Corp.
KN Kline Linotyping Co., Inc.
LA Lafayette Linotyping, Inc.

New York City

LE Oscar Leventhal, Inc.
MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schirmer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.

BT Baltimore Type & Comp. Corp.

Boston, Mass.

GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

Buffalo, N. Y.

SA Axel E. Sahlin Typog. Service

Chicago

AT American Typesetting Corp.
BS J. M. Bundscho, Inc.
ML M & L Typesetting and Electrotyping Co.
MO Monsen-Chicago, Inc.

Cincinnati, Ohio

FD J. W. Ford Co.

Dayton, Ohio

DA Dayton's Typographic Service

Detroit, Mich.

DT Detroit Typesetting Co.

Philadelphia, Pa.

AJ Alfred J. Jordan, Inc.
JM John C. Meyer & Son
RU Ruttle, Shaw & Wetherill, Inc.
TY Typographic Service, Inc.
VP Armstrong, Walter T., Inc.

Providence, R. I.

TC Typesetting Service Co.

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PARK AVENUE, Inter
GR: 12-14

PEN BOLD
BA: 18

PERPETUA with Italic, Special on Mono
RE: 10-12-14-18

PLYMOUTH No. 60, Mono
KI: 10

POLIPHILUS, Special on Mono
MA: 10-12-16-24-30

POST TEXT, with Italic and Small Caps, No. 5, Mono
CO: 5½-6-7
ML: 5½-6
AT, DT, ET, FS, JM, MA, TS: 6
BU: 6 and 7-8 (Roman only)
BS: 9
TU: 6-7
SC: 6-8 (Roman only)

POWELL No. 97, Mono
BU: 8
MO: 24
SC: 12

PUNCH, Special on Mono
DT: 18-24-30-36

RADIANT BOLD, Lud
DT: 12-14-18-24-30-36-42-48-60-72

RADIANT BOLD CONDENSED, Lud
DT: 14-18-24-30-36-42-48-60-72
RE: 14-18-24-30-36-48-60
AB, JM: 18-24-30-36-48-60-72
CW: 18-24-36-48

RADIANT BOLD EXTRA CONDENSED, Lud
AT, DT: 14-18-24-30-36-42-48-60-72
RE: 14-18-24-30-36-42-48
CE, JM: 18-24-30-36-48-60-72
LA: 18-24-30-36-48 (with alt. characters)
OB: 18-24-36-48 (with alt. characters)
ML: 18-24-30-36-48

RADIANT EXTRA CONDENSED, Special on Mono
CR: 14-18-24-30

RADIANT HEAVY, Lud
AT, DT: 14-18-24-30-36-42-48-60-72
BR: 18-24-30-36-48

RADIANT MEDIUM, Lud
DT: 12-14-18-24-30-36-42-48-60-72

RAGOS, Special on Mono
ML: 18-24-30-36-48-60

REMINGTON
(See Typewriter)

REMSON BOLD with LORIMER, Lino
(See reverse order)

REX, Inter
FD: 4

REX with Gothic Franklin, Inter
DA: 4
DT: 4-5

RHUMBA, Caps, Special on Mono
RE: 24-36-48

ROCKWELL ANTIQUE No. 189, Mono
DT: 6-8-10-12-14-18-24-30-36-42-48-60-72
AT, BT, BU, JU, ML, MO: 6-8-10-12-14-18-24-30-36-48-60-72
JM, PM: 6-8-10-12-14-18-24-30-36
FS: 6-8-10-12
CO, PT, RU: 8-10-12-14-18-24-30-36-48-60-72
BS: 12-14-18-24-30-36-48
FD: 14-18-24-30-36-48-60-72
BX: 12

ROCKWELL ANTIQUE ITALIC, Mono
(See Stymie Bold Italic No. 189—Mono)

ROCKWELL ANTIQUE SHADED No. 193, Mono
MO: 12-18-24-30-36
JU: 12-14-18-24-30
BT, SC: 12-18-24-30

ROMAN with Italic and Small Caps, Inter
JE: 5½-6-7-8-10-11
DA: 5
HO, WR: 6-8
GL: 6-7-11

ROMAN No. 1, Inter
DO: 5
LE: 6

ROMAN No. 1 with Italic, Inter
DO: 8-11

ROMAN No. 1 with Italic, Lino
TU: 6-7-11 (Roman only)

ROMAN with Antique, Lino
JE, TU: 6

ROMAN with Clarendon, Lino
JE: 5½

ROMAN with Bold Face No. 2, Inter
JE: 5½-6-7-8
LE, RS: 6
GL: 6-8

ROMAN with Bold Face No. 2, Lino
CL: 5-6-7
TE: 5-6
CE: 5½-6-8-10
AL: 5½-6
HO: 6
CC: 6-7

ROMAN No. 9 with Italic, Inter
DO: 11

ROMAN with Gothic, Lino
JE: 5-6-7-8
OB: 4-5-6-7-8
DM: 5
HO: 5-6-8
WR: 6-8

ROMAN with Bell Gothic, Lino
TE: 6

ROMAN BOLD, Lino
AT: 24

ROMAN No. 18 with Heavy Gothic Lino
TU: 5

ROMAN CONDENSED with Gothic Condensed, Lino
HO: 5½
AL, GL: 5

ROMAN with Gothic Extra Condensed, Lino
AL: 5
JE: 6

ROMAN with Roman Wide, Lino
WR: 5

ROMAN with Title No. 3, Lino
JE: 8

RONALDSON with Italic and Small Caps, Inter
FD: 6-8-10-12-14

RONALDSON with Italic and Small Caps, Lino
BU: 8
ML: 10
GR, MA: 6-8-10-11-12

RONALDSON with Antique No. 1, Lino
FD: 8-10

RONALDSON OLD STYLE No. 16 Roman, Italic and Small Caps, Mono
CC: 8-10-12
BU, PM: 6-8-10-12
BX: 8-10-12
ML: 8 (Roman only)
SC: 6-8-10

RUSSIAN No. 308, Modern, and No. 318, Century Bold, Mono
ML: 8-10-12

RUSSIAN No. 311, DeVinne, Mono
ML: 14-24-36

SAMSON, Lud
RE: 24-48
DT, JM: 24-36-48-72

SANS SERIF BOLD No. 330, Mono
AT: 6-8-10-12-14-18-24-30-36-42-48-60-72-84
DT, FD: 6-8-10-12-14-18-24-30-36-42-48-60-72-84 (caps only)
BX, CO, ML, MO, PM, PT: 6-8-10-12-14-18-24-30-36-42-48-60-72
BT, BU, JM, JU, MA: 6-8-10-12-14-18-24-30-36-48-60-72
RU: 6-8-10-12-14-18-24-30-36-48
BS, ET: 6-8-10-12-14-18-24-30-36
FS, KI, TU: 6-8-10-12
TS: 6-8-10
VP: 6-8
AD: 18-24-30-36
CC: 6-8-10-12-14-18-24-30-36-42-48

SANS SERIF BOLD ITALIC No. 330, Mono
AT: 6-8-10-12-14-18-24-30-36-42-48-60-72-84
ML, MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
JM, RU: 6-8-10-12-14-18-24-30-36
TS: 6-10
DT: 8-10-12-14-18-24-30-36-42-48
ET: 8-10-12-14-18-24-30-36
BU: 8-14-18-24-30-36
KI: 8-10-12
FD: 14-18-24-30-36-42-48-60-72
BX, CC, CO, PT: 14-18-24-30-36

SANS SERIF BOLD Alternate No. 330H91, Mono
ML, MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
PT: 6-8-10-12-14-18-24-30-36-42-48
JM: 6-8-10-12-14-18-24-30-36
BU: 8-10-12-14-18-24-30-36-48-60-72
TS: 8-10
PM: 12-14-18-24-30-36
BX: 6-8-10-12

SANS SERIF BOLD ITALIC Alternate No. 330H91, Mono
ML, MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
JM: 6-8-10-12-14-18-24-30-36
TS: 8-10
PT: 14-18-24-30-36

SANS SERIF BOLD Alternate No. 330H92, Mono
PM: 6-8-10-12-14-18-24-30-36
MO: 12-14-18-24-30-36

SANS SERIF EXTRA BOLD No. 332, Mono
VP: 6-8-10-12
FD: 8-10-12-14-18-24-30-36-42-48-60-72-84
AT, ML, MO: 8-10-12-14-18-24-30-36-42-48-60-72
CO: 8-10-12-14-18-24-30-36-48-60-72
BU: 8-10-12-14-18-24-30-36
DT: 8-10-12-14-18-24-30-36-42-48-60-72-84 (caps only)
BT, JU, RU: 12-14-18-24-30-36-48-60-72
PM, PT: 14-18-24-30-36-42-48-60-72
AD, BX, ET: 14-18-24-30-36
MA: 8-10-12-14-18-24-30-36-48
CC: 14-18-24-30-36-42-48

SANS SERIF EXTRA BOLD ITALIC No. 332, Mono
BU, BX, CO: 8-10-12-14-18-24-30-36
DT: 10-12
CC, PT: 14-18-24-30-36
FD: 18-24-30-36-42-48-60-72

SANS SERIF EXTRA BOLD Alternate No. 332H91, Mono
BU, ML, MO: 8-10-12-14-18-24-30-36-42-48-60-72
JM: 8-10-12-14-18-24-30-36
PT: 14-18-24

SANS SERIF EXTRA BOLD CONDENSED No. 333, Mono
FD, PM: 14-18-24-30-36-42-48-60-72
JM: 14-18-24-30-36

SANS SERIF LIGHT No. 329, Mono
BX, MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
BU, DT, ET, FD, ML, PM, PT: 6-8-10-12-14-18-24-30-36-48-60-72
CO: 6-8-10-12-14-18-24-30-36-48-60
BT, JU, MA, RU: 6-8-10-12-14-18-24-30-36-48
AT, BX, JM: 6-8-10-12-14-18-24-30-36
BS, FS, TU: 6-8-10-12
TS: 6-8
KI: 8-10-12
JO: 14-18-24-30-36
CC: 6-8-10-12-14-18-24-30-36-42-48

SANS SERIF LIGHT ITALIC No. 329, Mono
MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
ML: 6-8-10-12-14-18-24-30-36-48-60-72
JM, RU: 6-8-10-12-14-18-24-30-36
TS: 6-8
KI: 8-10-12
AT: 8-10-14
BU, BX, CC, CO, JO, PT: 14-18-24-30-36

SANS SERIF LIGHT Alternate No. 329H91, Mono
MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
ML: 6-8-10-12-14-18-24-30-36-48-60-72
FD: 6-8-10-12-24-30-36-42-48-60-72
PT: 6-8-10-12-14-18-24-30-36-42-48
JM: 6-8-10-12-14-18-24-30-36

SANS SERIF LIGHT ITALIC Alternate No. 329H92, Mono
MO: 6-8-10-12-14-18-24-30-36-42-48-60-72
ML: 6-8-10-12-14-18-24-30-36-48-60-72
JM: 6-8-10-12-14-18-24-30-36
BU: 8-10-12-14-18-24-30-36-60-72
PT: 14-18-24-30-36

SANS SERIF LIGHT CONDENSED No. 357, Mono
FD: 14-18-24-30-36-42-48-60-72
BS: 24 (caps and figures)

SANS SERIF LINED No. 430, Mono
RU: 14-18-24
BU, BX, CC, CO, JM, PT, SC: 24-30-36

SANS SERIF Special No. 429, Mono
JM: 14-18-24-30-36

SANS SERIF MEDIUM No. 331, Mono
VP: 6-8-10-12
BX, ML, MO: 8-10-12-14-18-24-30-36-42-48-60-72
DT: 8-10-12-14-18-24-30-36-48-60-72
FD: 8-10-12-14-18-24-30-36-42-48
AT, BU, CO, ET, JM, PT: 8-10-12-14-18-24-30-36
SA: 8-10-12
AD: 14-18-24-30-36
CC: 8-10-12-14-18-24-30-36

SCOTCH with Italic and Small Caps, Lino
ET: 6-8-9-10-11-12
AL: 6-8-10-11-12-14
GL: 6-8-10-11-11½-12
CR, JM: 6-8-10-11-12
DT: 6-8-10-12-14
SL: 6-8-10-12
AT, DO: 6-8-10
CO: 8-10-11-12-14
BU, CE, CW, MA, OB, WR: 8-10-11-12
BA: 8-10-12-14
JE, PT: 8-10-12

New York City

AB Abend Typograph Co., Inc.
AD Advertising Agencies Service Co., Inc.
AL Allied Typographers, Inc.
AC Atlantic Linotype Co., Bklyn.
BA M. J. Baumwell, Typography
BX Baxter and Spencer, Inc.
BR Boro Typographers, Inc.
BU Howard O. Bullard, Inc.
CC Cooper and Cohen, Inc.
CE Central Linotypers, Inc.
CL Crescent Linotyping Corp.
CO Commanday Bros., Inc.
CR Composing Room, Inc.
CS Composition Service, Inc.
CN Consolidated Production Service, Inc.

New York City

CW Fred. A. Crowell, Inc.
DM Diamant Typographic Service, Inc.
DO Downtown Typesetter, Inc.
EM Empire State Craftsmen, Inc.
ET A. T. Edwards Typography, Inc.
FS Frederick W. Schmidt, Inc.
GL Ganer Linotype Craftsmen
HO F. Hochstadt Co.
HU Hurst Linotypers, Inc.
JE A. O. Jennings, Inc.
JU Judson Type, Inc.
KI King Typographic Service Corp.
KN Kline Linotyping Co., Inc.
LA Lafayette Linotyping, Inc.

New York City

LE Oscar Leventhal, Inc.
MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schirmer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.

BT Baltimore Type & Comp. Corp.

Boston, Mass.

GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

Buffalo, N. Y.

SA Axel E. Sahlin Typog. Service

Chicago

AT American Typesetting Corp.
BS J. M. Bundscho, Inc.
ML M & L Typesetting and Electrotyping Co.
MO Monsen-Chicago, Inc.

Cincinnati, Ohio

FD J. W. Ford Co.

Dayton, Ohio

DA Dayton's Typographic Service

Detroit, Mich.

DT Detroit Typesetting Co.

Philadelphia, Pa.

AJ Alfred J. Jordan, Inc.
JM John C. Meyer & Son
RU Ruttle, Shaw & Wetherill, Inc.
TY Typographic Service, Inc.
VP Armstrong, Walter T., Inc.

Providence, R. I.

TC Typesetting Service Co.

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MANDATE	EGMONT · METRO	GARAMOND	GRANJON
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SCOTCH wtih Italic and Small Caps, Lino
ML: 8-10-11
LE: 8-10
DM: 8-9
LA: 12
RU: 11-12

SCOTCH with Italic and Small Caps, Inter
AL: 6-8-10-11-12-14
FD: 6-8-10-12-14
AT: 10-11-12-14
KN: 8-10-12

SCOTCH ROMAN with Jenson, Lino
BU: 12

SCOTCH No. 2 with Italic and Small Caps, Lino
VO: 6-8-9-10-11-12-14
OB, CW: 8-9-10-11-12
JM: 8-10-11-12
ET: 8-10-12
DM: 8-9
BU: 8
DT: 9
CR: 9-10-11
WR: 10½
VO: 8-9-10-11-12 (Roman only)

SCOTCH ROMAN with Italics and Small Caps, Lino
TU: 6-8-10-11-11½-12

SANS SERIF MEDIUM Alternate No. 331H91, Mono
ML, MO: 8-10-12-14-18-24-30-36-42-48-60-72
BU, BX, JM, PT: 8-10-12-14-18-24-30-36
MA: 8-10-12-14-18-24-30-36

SANS SERIF MEDIUM CONDENSED No. 354, Mono
FD: 14-18-24-30-36-42-48-60-72
BT, JU, RU: 14-18-24-30-36-48-60-72
MO: 14-18-24-30-36-48

SCOTCH, Lino
CC: 6-8-10-12
TE: 6-8-10-11-12
VO: 6

SCOTCH ROMAN No. 36 Roman and Italic (Small Caps 6 to 12 pt.), Mono
AT, BS, MA: 6-8-9-10-11-12-14-18-24-30-36
BU, PM, PT: 6-8-10-12-14-18-24-30-36
MO: 6-8-9-10-11-12-14 (Roman only) 18-24-30-36
DT, ML: 6-8-9-10-11-12 and 14-18-24-30-36 (Roman only)
AD, CN, FS, TH, TS: 6-8-9-10-11-12
BT, CO: 6-8-10-12
VP: 8-9-10-11-12
ET: 8-10-12
AJ, JM, SC, TY: 6-8-9-10-12
BX: 8-10-11-12-14-18

SCOTCH ROMAN ITALIC Swash No. 36, Mono
AJ, TU: 6-8-9-10-11-12
PM: 9-10-11-12-14-18-24-30-36
MA: 6-8-9-10-11-12 and 14-18-24-30-36 (Roman only)
BX: 8-10-11-12-14-18
CC: 6-8-9-10-11-12 (Roman only) 14-18-24-30-36

SLIM LINE No. 241, Mono
RE: 24-72

SMITH
(See Typewriter)

SPARTAN BLACK, Lino
TU: 6-8-10-12-14-18
TS: 18-24

SPARTAN BLACK with Italic, Lino
TS: 6-8-9-10-12-14
TU: 6-8-10-12-14-18
BR, BU, DM, TE: 6-8-10-12-14
CR: 8-9-10-12-14-18
CO, DT, TH: 8-10-12-14
MO: 14

SPARTAN BLACK CONDENSED, Lino
DT, TS: 18-24

SPARTAN BLACK CONDENSED with Italic, Lino
DT: 12-14

SPARTAN BLACK CONDENSED and Medium Condensed, Lino
TS: 14

SPARTAN DEMI with Italic, Lino
BR: 6-8-10-12-14

SPARTAN HEAVY, Lino
CL, TU: 6-8-10-12-14
DT: 18
TS: 18-24

SPARTAN HEAVY with Italic, Lino
TH, TS: 6-8-9-10-12-14
BR, BU, HU, TU: 6-8-10-12-14
DM: 6-8-10-12-14-18
CR: 8-9-10-12-14-18
CO, DT, MO: 8-10-12-14
DO: 9

SPARTAN LIGHT with Italic, Lino
DT: 8-10-12-14

SPARTAN LIGHT with Medium, Lino
LE: 8-10

SPARTAN LIGHT with BOLD, Lino
AB: 8-10-12

SPARTAN MEDIUM, Lino
TU: 6-8-10-12-14-18
DT, TS: 18-24
MA: 6

SPARTAN MEDIUM with Italic, Lino
CR, TS: 6-8-9-10-12-14-18
TH: 6-8-9-10-12-14
MO ,TU: 6-8-10-12-14-18
BR, BU, HU: 6-8-10-12-14
DM: 6 (Roman only)-8-10-12-14
DO: 8-9-10-12-14
DT: 8-10-12-14
CO: 8-10-12

SPARTAN MEDIUM with Heavy, Lino
MA: 6

SPIRE No. 377, Caps, Mono
BU, BX, FD, MO: 24-30-36-42-48-60-72
BT, DT, JM, JU, RU: 24-30-36-48-60-72
CC CO: 24-30-36-42-48
TY: 30-36-48-60

SQUARE GOTHIC, Lud
(See Gothic Square—Lud)

STELLAR BOLD, Lud
HO: 12-14-18-24-30-36-48-60 (caps only)
CW, OB: 14-18-24-30-36-48
TC: 18-24-36-48
GR: 18-24-30-36-48-60-72

STELLAR LIGHT, Lud
HO: 12-14-18-24-30-36-48-60
CW, OB: 14-18-24-30-36-48
WR: 14-18-24-30-42
TC: 18-24-36-48

STENCIL, Lud
DT, KN: 36

STYGIAN BLACK, Lud
WR: 24-36-48

STYGIAN BLACK ITALIC, Lud
RS: 14

STYLE SCRIPT No. 425, Mono
BT, DT, JU, RU: 14-18-24-30-36-48-60-72

STYMIE BOLD Roman and Italic No. 790, Mono
AD, JM: 6-8-10-12-14-18-24-30-36
ET, TS: 6-8-10-12
MO: 6 (Roman only)-8-10-12-14-18 and 24-30-36 (Roman only)

STYMIE BOLD No. 189, Mono
CC: 8-10-12-14-18-24-30-36-48

STYMIE BOLD ITALIC No. 189, Mono
BT, JU, RU: 6-8-10-12-14-18-24-30-36-48
AD, MA: 6-8-10-12-14-18-24-30-36
ML: 8-10
ET: 8-10-12
MO: 8-10-12-14-18-24-30-36
FD: 14-18-24-30-36-48
BU, BX, CC, CO, JM, PT: 14-18-24-30-36

STYMIE BOLD OPEN No. 108, Special on Mono
BT, JU: 24 (2 sizes)
DT, JM, RU: 24 (2 sizes)-30-36-48

STYMIE CONDENSED No. 690, Mono
JM: 14-18-24-30-36

STYMIE EXTRA BOLD No. 390, Mono
BT, BX, DT, MO, RU: 6-8-10-12-14-18-24-30-36-48-60-72
JM, MA: 6-8-10-12-14-18-24-30-36
AJ, FS, TY, VP: 6-8-10-12
AT, BU, CO, JU, ML, PT: 8-10-12-14-18-24-30-36-48-60-72
FD: 14-18-24-30-36-42-48
ET: 8-10-12
CN: 8-10-12-14
CC: 14-18-24-30-36-48-60

STYMIE EXTRA BOLD ITALIC No. 390, Mono
BT, JU, RU: 6-8-10-12-14-18-24-30-36-48
AT: 6-14
DT, ML: 8-10-12-14-18-24-30-36
MO: 8-10-14-18-24-30-36
PT: 10-12-14-18-24-30-36
FD: 14-18-24-30-36-48
BU, BX, CC, CO, ET, JM: 14-18-24-30-36
CN: 8-10-12-14

STYMIE EXTRA BOLD CONDENSED No. 490, Mono
MO: 14-18-24-30-36-42-48-60-72
BT, BU, BX, CR, DT, FD, JU, ML, PT, RU, TY: 14-18-24-30-36-48-60-72
AD, CO, ET, JM: 14-18-24-30-36
AT: 14 18-30
CC: 14-18-24-30-36-48-60
CW: 14-18-24-30-36-48

STYMIE LIGHT No. 190, Mono
BU, ML: 6-8-10-12-14-18-24-30-36-48-60-72
DT: 6-8-10-12-14-18-24-30-36-48-60
AT, BT, JU: 6-8-10-12-14-18-24-30-36-48
AD, ET, JM: 6-8-10-12-14-18-24-30-36
BS, FS, MO, TS, TY: 6-8-10-12
CO: 8-10-12-14-18-24-30-36-48-60-72
SA: 8-10-12
BX, PT: 12-14-18-24-30-36-48-60-72
FD: 14-18-24-30-36-48-60-72
RU: 24-30-36-48
CC: 14-18-24-30-36-48

STYMIE LIGHT ITALIC No. 190, Mono
AD, BT, JU, RU: 6-8-10-12-14-18-24-30-36
TS: 6-8-10-12
ML, MO: 10
BU, BX, CC, CO, JM, PT: 14-18-24-30-36

STYMIE MEDIUM No. 290, Mono
BU, BX, ML, MO: 6-8-10-12-14-18-24-30-36-48-60-72
AT: 6-8-10-12-14-18-24-30-36-42-48
BT, JU, RU: 6-8-10-12-14-18-24-30-36-48
AD, DT, ET, JM, MA: 6-8-10-12-14-18-24-30-36
BS: 6-8-10-12-14
AJ, AT, FS, PM, TS, TY, VO, VP: 6-8-10-12
PT: 8-10-12-14-18-24-30-36-48-60-72
CO, FD: 14-18-24-30-36
CC: 8-10-12-14-18-24-30-26-48

STYMIE MEDIUM ITALIC No. 290, Mono
BT: 6-8-10-12-14-18-24-30-36-48
AD, JM, JU, MA, RU: 6-8-10-12-14-18-24-30-36
SU, TS: 6-8-10-12
ML: 8-10-12-14-18-24-30-36-42-48
MO: 8-10-12-14-18
TY: 10
BU, BX, CC, CO, PT: 14-18-24-30-36

STYMIE MEDIUM CONDENSED No. 590, Mono
BS: 6-8-10-12-14-18-24-30-36
BT, DT, FD, JM, JU, ML, MO, PT, RU, TY: 14-18-24-30-36-48-60-72
BU, CC, CR, PM: 14-18-24-30-36-48
BX, CO: 14-18-24-30-36
AT: 14-18

STYMIE SHADED No. 193, Mono
BT, JU, RU: 12-18-24-30

SWING BOLD No. 217, Mono
BU, BX, CC, MO: 14-18-24-30-36-42-48-60-72
DT, RU: 14-18-24-30-36-48-60-72
CO, ET: 14-18-24-30-36
BT, JU: 18-24-30-36-48-60-72
CW: 14-18-24-30-36-48

TARIFF No. 8, Mono
(See Modern No. 8—Mono)

TARIFF No. 26, Mono
(See Antique Modern No. 26—Mono)

TELEPHONE, Lino
CR, ET: 6

TELEPHONE with Gothic Condensed No. 2, Lino
(See reverse order)

TEMPO BLACK, Lud
AL: 18-24-30-36-42-48-60-72
JM: 18-24-30-36-48-60-72
BR, GR, HO: 18-24-30-36-48

TEMPO BOLD, Lud
AB: 6-8-10-12-14-18-24-36
ET: 8-10-12-14-18-24-30-36-48
KI: 12-14-18-24-30-36-42-48-60-72
AL: 14-18-24-30-36-42-48
TU: 14-18-24-30-36-42-48-60-72
CR: 18-24-30-36-42-48-60-72
CW, HU, WR: 18-24-30-36-48-60-72
DO: 18-24-30-36-48-60
CL, HO, LA, LE, OB, PT: 18-24-30-36-48
JE: 18-24-30-36-42
JM, RU: 24-30-36-42-48-60-72
AC, CE, MT: 24-30-36-48
GL: 24
ML: 42-48-60-72
BR: 18-24-30

TEMPO BOLD ITALIC, Lud
CE: 18-24-30-36-48
LA: 18-24-36
RU: 24-36-48
CW: 18-24-30-36-42-48

TEMPO BOLD CONDENSED, Lud
KN: 12-14-18-24-30-36-42-48-60-72-84-96
CL: 14-18-24-36-48-72
JM: 18-24-36-48-60-72
LA: 18-24-30-36-48-60-72
LE: 18-24-30-36-48 and 60-72 (caps and figures only)
DO: 18-24-30-36-48-60
OB: 18-24-30-36-42-48
JE: 18-24-30-36-48
HO: 30
GR: 18-24-30-36-48
AB: 24-36-48

TEMPO EXTRA BOLD, Lud
CL: 12-14-18-24-30-36-48-60-72
CR: 18-24-30-36-42-48-60-72
WR: 18-24-30-36-48-60-72

New York City

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JE A. O. Jennings, Inc.
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MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schismer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.

BT Baltimore Type & Comp. Corp.

Boston, Mass.

GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

Buffalo, N. Y.

SA Axel E. Sahlin Typog. Service

Chicago

AT American Typesetting Corp.
BS J. M. Bundscho, Inc.
ML M & L Typesetting and Electrotyping Co.
MO Monsen-Chicago, Inc.

Cincinnati, Ohio

FD J. W. Ford Co.

Dayton, Ohio

DA Dayton's Typographic Service

Detroit, Mich.

DT Detroit Typesetting Co.

Philadelphia, Pa.

AJ Alfred J. Jordan, Inc.
JM John C. Meyer & Son
RU Ruttle, Shaw & Wetherill, Inc.
TY Typographic Service, Inc.
VP Armstrong, Walter T., Inc.

Providence, R. I.

TC Typesetting Service Co.

TEMPO EXTRA BOLD, Lud
BR, HU: 18-24-30-36-48
GL: 24-30-36-48

TEMPO EXTRA BOLD, APL
TU: 24-30-36-42-48-60-72

TEMPO HEAVY, Lud
AB: 8-10-12-14-18-24-30-36-48-60-72
AL, CL, KN: 12-14-18-24-30-36-48-60-72
TU: 14-18-24-30-36-42-48-60-72
LA: 14-18-24-30-36-48-60-72
RS: 14-18-24-30-36-42-48
JE: 14-18-24-30-36-42
CW, GR: 18-24-30-36-42-48-60-72
CE, HO, HU: 18-24-30-36-48-60-72
DO, OB: 18-24-30-36-48-60
LE: 18-24-36-48
ET: 18-24-36-42
GL, MT, PT: 24-30-36-48
AC, JM: 24-30-36-48-60-72
RU: 24-30-36
ML: 42-48-60-72
BR: 18-24-30-36-48

TEMPO HEAVY ITALIC, Lud
KN: 14-18-24-30-36-48-72
AL: 14-18-24-30-36-48
CE, JM: 18-24-30-36-48-60-72
DO, HO: 18-24-30-36
LA: 18-24-36
PT, RU: 24-30-36
ML: 42-48-60-72
BR: 18-24-36-48

TEMPO INLINE, Lud
KN: 18-24-36-48 (caps and figures only)

TEMPO HEAVY INLINE, Lud
CE, CR: 18-24-30-36-48
AL: 18-24-36-48 (caps only)

TEMPO HEAVY CONDENSED, Lud
ML: 42-48-60-72
JM: 48-60-72
BR: 18-24-30-36-48

TEMPO HEAVY CONDENSED ITALIC, Lud
AL: 14-18-24-30-36-42-48-60-72
GR: 14-18-24-30-36-48-60-72
JE: 18-24-30-48
AB: 18-24-36
ML: 42-48-60-72
HO: 18-24-30-36

TEMPO LIGHT, Lud
AB: 8-12-14-18
RU, TU: 18-24-30-36-42-48-60-72
AC: 18-24-30-36-48
KN: 18-24-36-48
LE: 18-24-30
CL: 18
JM: 24-30-36-42-48-60-72
CR: 24-30-36-42-48
AL, CE: 24-30-36-48

TEMPO LIGHT ITALIC with Swash, Lud
CE: 18-24-30-36-48
JE: 18-24-30-48
RU: 18-24-36

TEMPO MEDIUM, Lud
ET: 12-18-24-30-36-48
WR: 12-14-18-24
AL, HU: 18-24-30-36-48-60-72
DO, KN: 18-24-30-36-48-60
RS: 18-24-30-36-42-48
GR, LA, LE: 18-24-30-36-48
HO: 18-24
CW, OB: 24-30-36-48-60-72
MT: 24-30-36-48-60
PT: 24-30-36
ML: 42-48-60-72

TEMPO MEDIUM ITALIC, Lud
KN: 10-12-14-18-24-36-48 (with Swash)
AL: 14-18-24-30-36-48 (with Swash)
AC, LA: 18-24-36
AB: 8-10-12-14-18

TEXTYPE with Italic and Small Caps, Lino
MO: 6-8-9-10-11-12
ML: 6-8-9-10-12-14
DA: 6-8-10-12-14
CC: 8-9

TEXTYPE with Bold, Lino
DA: 6-8-10-12-14
DT: 7
ML: 10-12

TEXTYPE BOLD with Italic, Lino
ML: 9-11

TIMES ROMAN
VO: 5½-7-8-9-10-11

TIMES NEW ROMAN No. 327, English Mono
TS: 6-7-8-9-10-11-12-14
BS: 14-18-24-30-36-48

TIMES NEW ROMAN with Italic (Small Caps 6 to 12 pt.) No. 327, English Mono
BS: 6-7-8-9-10-11-12-14-18-24
BU: 6-7-8-9-10-11-12
CR: 8-9-10-11

TIMES NEW ROMAN No. 327 with Semibold No. 421, English Mono
TS: 6-7 (2 sizes)
CR: 8-9-10-11

TIMES NEW ROMAN SEMIBOLD No. 421, English Mono
TS: 6-7

TIMES BOLD No. 334, English Mono
BS: 6-7-8-9-10-11-12-14-18-24
TS: 6-7-8-9-10-11-12-14
BU: 6-7-8-9-10-11-12
CR: 8-9-10-11

TITLE No. 1, Lino
MA: 6-10
BU: 7-8

TITLE No. 1 with DeVinne, Lino
ML: 8

TITLE No. 1 with No. 19, Lino
(See reverse order)

TITLE No. 1 with Old Style No. 1, Lino
(See reverse order)

TITLE No. 2, Lino
BU: 7-8

TITLE No. 2 With Old Style No. 1, Lino
(See reverse order)

TITLE No. 4 with Gothic No. 16, Lino
(See reverse order)

TITLE CONDENSED No. 3 with No. 2, Lino
(See reverse order)

TITLE CONDENSED No. 3 with No. 2, Inter
(See reverse order)

TITLE CONDENSED No. 5 with No. 17, Lino
(See reverse order)

TITLE No. 28, Mono
CC: 5½-6
DT, MA, ML: 6-8
BU: 6-7
BT, MO: 6
AT: 6-7-8

TITLE No. 255, Mono
ML: 5½

TOURIST GOTHIC, Lud
(See Gothic Tourist—Lud)

TRAFTON SCRIPT, Special on Mono
BU, BX, CC, CO, NY: 24-36

TRYLON No. 801, Mono
BT, DT, JU: 24-36 and 42-48 (caps only)
JM: 24-36 and 48-60 (caps only)
RU: 24-36-48-60

TWENTIETH CENTURY BOLD No. 604, Mono
DT, MO: 6-8-9-10-11-12-14-16-18-24-30-36-42-48-60-72
FD: 6-8-10-12-14-18-24-30-36-42-48-60-72
BT, JM, JU, ML: 6-8-10-12-14-18-24-30-36-48-60-72
AT: 6-8-9-9½-10-12-14-18-24-30-36-48-60
AD: 6-8-10-12-14-16-18-24-30-36-42
FS, SC: 6-8-9-10-11-12
TS: 6-8-10-11-12
TY, VP: 6-8-9-10-12
BX: 6-8-9-10-11-12-14-16-18-24-30-36-48-60-72
BS, CO, ET: 6-8-9-10-11-12-14-16-18-24-30-36
BU: 8-9-10-11-12-14-16-18-24-30-36-42-48-60-72
BA: 8-10-12
PT: 14-18-24-30-36-48-60-72
MA: 6-8-10-12-14-18-24-30-36

TWENTIETH CENTURY DEMIBOLD No. 604, Mono
AJ: 6-8-9-10-11-12
CC: 6-8-10-12-14-16-18-24-30-36-42-48-60-72

TWENTIETH CENTURY BOLD ITALIC No. 604, Mono
DT, MO: 6-8-9-10-11-12-14-16-18-24-30-36-42-48-60-72
FD: 6-8-10-12-14-18-24-30-36-42-48-60-72
ML: 6-8-10-12-14-18-2430-36-48-60-72
BT, JM, JU, TY: 6-8-10-12-14-18-24-30-36-48
AD: 6-8-10-12-14-16-18-24-30-36-42
BS, CO, ET: 6-8-9-10-11-12-14-18-24-30-36
AT: 6-8-9-10-12-14-18-24-30-36
TU: 6-8-9-10-11-12
TS: 6-8-10-11-12
BU: 8-9-10-11-12-14-16-18-24-30-36-42-48-60-72
MA: 6-8-10-12-14-18-24-30-36
BX: 6-8-9-10-11-12-14-18-24-30-36-48-60-72
PT: 14-18-24-30-36
CC: 14-16-18-24-30-36-42-48-60-72

TWENTIETH CENTURY DISPLAY No. 602, Mono
DT: 14-18-24-30-36-48-60-72
JM: 14-18-24-30-36-48-60

TWENTIETH CENTURY EXTRA BOLD No. 603, Mono
BU, DT, MO: 6-8-9-10-11-12-14-16-18-24-30-36-42-48-60-72
AT: 6-8-9-10-12-14-18-24-30-36-42-48-60-72
FD: 6-8-10-12-14-18-24-30-36-42-48-60-72
BT, JM, JU: 6-8-10-12-14-18-24-30-36-48-60-72
BX, ML: 6-8-10-12-14-16-18-24-30-36-48-60-72
BS, ET: 6-8-9-10-11-12-14-16-18-24-30-36-42
CO: 6-8-9-10-11-12-14-18-24-30-36
AD: 6-8-10-12-14-16-18-24-30-36-42
FS, TU: 6-8-9-10-11-12
TS: 6-8-10-11-12
CC, CN: 6-8-10-12-14-16-18-24-30-36-42-48-60-72
AJ: 6-8-10-12
PT: 14-18-24-30-36-48-60-72
MA: 6-8-10-12-14-18-24-30-36

TWENTIETH CENTURY EXTRA BOLD ITALIC No. 603, Mono
BU, DT, MO: 6-8-9-10-11-12-14-16-18-24-30-36-42-48-60-72
FD, JU: 6-8-10-12-14-18-24-30-36-42-48-60-72
CC: 14-16-18-24-30-36-42-48
CN: 6-8-9-10-11-12-14-18-24-30-36-48-60-72
ML: 6-8-10-12-14-18-24-30-36-48-60-72
BS, CO, ET: 6-8-9-10-11-12-14-16-18-24-30-36
AT: 6-8-9-10-12-14-18-24-30-36-48-60
AD: 6-8-10-12-14-16-18-24-30-36-42
BX: 6-8-10-12-14-18-24-30-36-48-60
BT, JM: 6-8-10-12-14-18-24-30-36-48
TU: 6-8-9-10-11-12
TS: 6-8-10-11-12
BU: 8-10-12-14-18-24-30-36-60
PT: 14-18-24-30-36-48
MA: 6-8-10-12-14-18-24-30-36

TWENTIETH CENTURY EXTRA BOLD CONDENSED No. 607, Mono
AT, BS, BT, BX, CC, DT, MO: 8-10-12-14-16-18-24-30-36-42-48-60-72
JM: 8-10-12-14-18-24-30-36-48-60-72
TY: 8-10-12-14-18-24-30-36-48-60-72 (caps only)
CO: 8-10-12-14-18-24-30-36-42-48
ET: 8-10-12-14-16-18-24-30-36
ML: 10-12-14-16-18-24-30-36-42-48-60-72
JU: 10-12-14-18-24-30-36-42-48-60-72
BT: 10-12-14-18 (2 sizes)-24-30-36-48-60-72
AD: 10-12-14-16-18-24-30-36-42
PT: 14-18-24-30-36-48-60-72
FD: 14-18-24-30-36-42-48
ML: 14-18-24-30-36
CN: 14-18-24-30-36-48

TWENTIETH CENTURY EXTRA BOLD CONDENSED ITALIC No. 607, Mono
BS: 6-8-10-12-14-18-24-30-36-42-48-60-72
BU, DT: 8-10-12-14-16-24-30-36-42-48-60-72
AT: 8-10-12-14-18-24-30-36-42-48-60-72
MO: 8-10-12-14-16-18-24-30-36-48-60-72
CO: 8-10-12-14-18-24-30-36-42-48
ML: 14-18-24-30-36-42-48-60-72
BT, BX, JM, JU, RE: 14-18-24-30-36-48-60-72
FD: 18-24-30-36-42-48-60-72
AD, ET: 18-24-30-36-42
TY: 18-24-30-36-48
CC: 14-18-24-30-36-42-48
CN: 10-12-14-18-24-30-36

TWENTIETH CENTURY LIGHT No. 606, Mono
FD: 6-8-10-12-14-18-24-30-36-48-60-72-84
JU: 6-8-10-12-14-18-24-30-36-48-60-72
AT: 6-8-10-12-14 (2 sizes)-18
AD, ET, ML, MO, TS, TY: 6-8-10-12
BS: 6-8
DT: 8-10-12
CN: 6-8-10-12-14-16-18-24-30-36

TWENTIETH CENTURY LIGHT ITALIC No. 606, Mono
MO: 6-8-10-12-14-16-18-24-30-36
AD, AT, CN, ET, ML, TS: 6-8-10-12
BS: 6-8
DT: 8-10-12

TWENTIETH CENTURY MEDIUM No. 605, Mono
AJ, TU: 6-8-9-10-11-12
BU, DT, MO: 6-8-9-10-11-12-14-16-18-24-30-36-42-48-60-72
BX, CN: 6-8-9-10-11-12-14-16-18-24-30-36-48-60-72
JU, ML: 6-8-10-12-14-18-24-30-36-48-60-72
AT: 6-8-9-10-12-14-18-24-30-36-42-48-60
FD, JM: 6-8-10-12-14-18-24-30-36-48
BS, CO, ET: 6-8-9-10-11-12-14-16-18-24-30-36

New York City

AB Abend Typograph Co., Inc.
AD Advertising Agencies Service Co., Inc.
AL Allied Typographers, Inc.
AC Atlantic Linotype Co., Bklyn.
BA M. J. Baumwell, Typography
BX Baxter and Spencer, Inc.
BR Boro Typographers, Inc.
BU Howard O. Bullard, Inc.
CC Cooper and Cohen, Inc.
CE Central Linotypers, Inc.
CL Crescent Linotyping Corp.
CO Commanday Bros., Inc.
CR Composing Room, Inc.
CS Composition Service, Inc.
CN Consolidated Production Service, Inc.

New York City

CW Fred. A. Crowell, Inc.
DM Diamant Typographic Service, Inc.
DO Downtown Typesetter, Inc.
EM Empire State Craftsmen, Inc.
ET A. T. Edwards Typography, Inc.
FS Frederick W. Schmidt, Inc.
GL Ganer Linotype Craftsmen
HO F. Hochstadt Co.
HU Hurst Linotypers, Inc.
JE A. O. Jennings, Inc.
JU Judson Type, Inc.
KI King Typographic Service Corp.
KN Kline Linotyping Co., Inc.
LA Lafayette Linotyping, Inc.

New York City

LE Oscar Leventhal, Inc.
MT Master Typographers, Inc.
OB Chas. D. O'Brien, Inc.
PT Philmac Typographers, Inc.
RE Real Typographers, Inc.
RS Starkey and Co.
SC Arthur B. Schirmer, Inc.
TE Terry Linotyping, Inc.
TU Tudor Typographers
TH Type House, The
TS Typographic Service Co.
VO Kurt H. Volk, Inc.

Baltimore, Md.

BT Baltimore Type & Comp. Corp.

Boston, Mass.

GR General Composition Co.
MA Machine Composition Co.
WR Cecil H. Wrightson, Inc.

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Cincinnati, Ohio

FD J. W. Ford Co.

Dayton, Ohio

DA Dayton's Typographic Service

Detroit, Mich.

DT Detroit Typesetting Co.

Philadelphia, Pa.

AJ Alfred J. Jordan, Inc.
JM John C. Meyer & Son
RU Ruttle, Shaw & Wetherill, Inc.
TY Typographic Service, Inc.
VP Armstrong, Walter T., Inc.

Providence, R. I.

TC Typesetting Service Co.

TWENTIETH CENTURY MEDIUM No. 605, Mono
AD: 6-8-10-12-14-16-18-24-30-36-42
BT 6-8 10-12 14-18 (2 sizes)-24-30-36-48
TY, VP: 6-8-9-10-12
TS: 6-8-10-11-12
SU: 6-8-10-12
BA: 8-10-12
SC 6-8-9-10-11-12
PT: 14-18-24-30-36-48-60-72
CC: 6-8-10-12-14-16-18-24-30-36-42-48-60-72
MA: 6-8-10-12-14-18-24-30-36

TWENTIETH CENTURY MEDIUM No. 605 with Demibold No. 604, Mono
TS: 8

TWENTIETH CENTURY MEDIUM ITALIC No. 605, Mono
MO: 6-8-9-10-11-12-14-16-18-24-30-36-42-48-60-72
ML: 6-8-10-12-14-18-24-30-36-48-60-72
BU: 6-8-9-10-11-12-14-16-18-24-30-36-42-48
JM: 6-8-10-12-14-18-24-30-36-48
BT, JU: 6-8-10-12-14-18 (2 sizes)-24-30-36-48
BS, DT, ET: 6-8-9-10-11-12-14-16-18-24-30-36
AD 6-8-10-12-14-16-18-24-30-36-42
AT, MA: 6-8-10-12-14-16-18-24-30-36
FD: 6-8-10-12-14-18-24-30-36
TY: 6-8-10-12-14
TS: 6-8-10-11-12
VP: 6-8-9
CN: 6-8-9-10-11-12-14-16-18-24-30-36-48
CO: 14-18-24-30-36
PT: 14-18-24-30-36-48
BX: 6-8-10-12-14-16-18-24-30-36-48-60-72
CC: 14-16-18-24-30-36-42-48

TWENTIETH CENTURY MEDIUM CONDENSED No. 608, Mono
BS, MO: 8-10-12-14-16-18-24-30-36-42-48-60-72
AT: 8-10-12-14-18-24-30-36
DT: 10-12-14-16-18-24-30-36-42-48
BU: 14-18-24-30-36-42-48-60-72
BT, JM, JU: 14-18-24-30-36-48-60-72
FD: 14-18-24-30-36-42-48
CO: 14-18-24-36-42-48
ML: 14-18-24-30-36-48
ET: 14-18-24-30-36
CC: 14-16-18-24-30-36-42-48
BX: 10-12-14-18-24-30-36-48
CN: 8-10-12-14-16-18-24-30-36-60-72

TWENTIETH CENTURY ULTRABOLD No. 609, Mono
BS, DT, JM: 8-10-12-14-18-24-30-36-42-48-60-72
ML: 8-10-12-14-18-24-30-36
AT: 8-10-12-14-18-24-30
BU, CC: 14-18-24-30-36-42-48-60-72
TU: 8-10-12
BX: 8-10-12 (caps, figs. and pts.) and 14-18-24-30-36

TWENTIETH CENTURY ULTRABOLD CONDENSED No. 610, Mono
BS, DT: 8-10-12-14-18-24-30-36-42-48-60-72
JM: 8-10-12-14-18-24-30-36-48-60-72
AT: 14-18-24-30-36

TYPEWRITER GIANT, Special on Mono
ML: 18 on 24

TYPEWRITER MAILING LIST No. 74, Mono
ML, MO: 8

TYPEWRITER, REMINGTON, Inter
JM, RS: 8-10-12
MT: 10
DA, FD: 10-12

TYPEWRITER, REMINGTON with Underscore, Inter
AC, AL, AT, BA, CL, DA, FD: 10-12
DT: 10
KN: 8-10-12

TYPEWRITER, REMINGTON, Lino
BU, CW, EM, GL, TH, TU: 8-10-12
RU: 8
VO: 8-10
OB: 8-12
DO, GR, HU, JE, LA, MA, TC: 10-12

TYPEWRITER, REMINGTON with Underscore, Lino
BU, CC, CO, ET, FS, JM, ML: 8-10-12
MT, TS: 8-10
BX, CS, DT, OB: 10
HO: 12
AT, CE, CR, GL, HO, HU, JE, LE, MA, PT, RU, TC, TH, WR: 10-12

TYPEWRITER, REMINGTON No. 70, Mono
JM: 8-12
BX, FS, TU: 10
MO: 12
AJ, AT, BT, BU, CC, DT, FD, MA, ML, PM, PT, TC, TS: 10-12

TYPEWRITER, REMINGTON RIBBON No. 17, Mono
AT, BS, BT, BU, CC, SC: 11
DT, ML, MO: 12

TYPEWRITER with Underscore, Lino
AB: 10-12

TYPEWRITER, REPRODUCING No. 72, Mono
BT, MO: 6-8-10-12
DT, JM, ML: 6-8-10
TY: 8-12
ET: 8-10-11-12
AJ, BS, CC, VP: 8-10-12
TU: 10
AL, AT, BU, BX, MA, PM, PT, SC: 10-12

TYPEWRITER REPRODUCING No. 372, Mono
ML: 10

TYPEWRITER REPRODUCING No. 372L with Underscore, Mono
BS: 8-10-12
ML: 10

TYPEWRITER, SMITH-PREMIER No. 170 with Underscore, Mono
DT: 12

TYPEWRITER, STENOGRAF, Lino
BA, BU: 12

TYPEWRITER, UNDERWOOD with Underscore, Inter
PT: 8-10
JM: 10-12
AL, KN: 10
HO: 12

TYPEWRITER, UNDERWOOD, ELITE, Inter
ML: 10
DT, MO: 10

TYPEWRITER, UNDERWOOD with Underscore, Lino
BU, CR, DO, MA, ML, MO: 10-12
DT, 10
CE, HO: 12

TYPEWRITER, UNDERWOOD No. 270, Mono
ML, TC: 10-12
DT, MO: 10

TYPEWRITER, UNDERWOOD No. 470 with Underscore, Mono
ML: 10-12

TYPO ROMAN SHADED, Inter
GR: 12-14-16-18

TYPO UPRIGHT, Special on Mono
ML: 14-18-24-30-36

ULTRA BODONI
(See Bodoni Ultra

ULTRA MODERN, Lud
CW, OB: 12-14-18-24-30-36-48
WR: 12-14-18-24-30-42-48
TC: 14-18-24-30-36-48
RS: 18-24-30-36-48
AL 18-24-36-48
AC: 24-36-48

ULTRA MODERN, Special on Mono
ML: 18-24-30-36

ULTRA MODERN BOLD, Lud
KI: 14-18-24-30-36-48-60-72
HO: 14-18-24-30-36-48
WR: 14-18-24-36-48
AB: 14-18-24

UMBRA, Lud
KN: 24-36-48-72 (caps and figures only)
CW, DT, HU, OB, WR: 24-36-48-72
AC, AL, CL, GR, HO, LA, SL: 24-36-48
ET: 36
CR, JM: 36-48-72
AB: 24-36

UNDERWOOD
(See Typewriter)

VALIANT No. 412, Mono
DT: 36-42-48-60-72
BX: 24-30

VICTORIA ITALIC No. 224, Mono
MO: 5-6-8-10

VOGUE, Inter
CR, CW, FD: 6-8-10-12-14-18
AC, HU: 6-8-10-12-14
OB: 18
ML: 18-24-30
AB: 18-24-30-36

VOGUE OBLIQUE, Inter
CO: 18
CW: 8-10-12-14

VOGUE with Oblique, Inter
PT: 6-8-10-12-14-18
AC, CR: 6-8-10-12-14
LE: 6-8-10

VOGUE with Bold, Inter
AB, AT, BU, CL, CO, DO, GL, HO, HU, JE, LE, MA, MC, ML, MO, MT, OB, RU, RS: 6-8-10-12-14
TE: 6-8-10-12-14-18-24 (caps only)
JM: 6-8-10-12-14-18 (Bold only)
BX: 6-8
DA: 8-10-12-14-18
DT, GR, JE, TC, WR: 8-10-12-14
AL, CE, FD, JM, KN, LA: 6-8-10-12-14-18
FS, TH: 14

VOGUE BOLD, Inter
AC, CC, CR: 6-8-10-12-14-18
TU: 6-8-10-12-14-18 (Roman only)
DT: 6-8-10-12-14-18-24-30-36
LE: 12-14
CO, CW, FS, GL, MO, OB, RU: 18
ET: 18-24
ML: 18-24-30
AT: 18-24-30-36
DA: 24-30-36-48

VOGUE BOLD CONDENSED, Inter
MA: 12-14

VOGUE BOLD CONDENSED with Extra Bold Condensed, Inter
AT: 8-10-12-14-18-24-30-36
ML: 8

VOGUE with Bold Oblique, Inter
KN: 6-8-10-12-14

VOGUE BOLD with Oblique, Inter
AC, PT: 6-8-10-12-14-18
AT, CR, HO: 6-8-10-12-14
LE: 6-8-10
RU, VO: 8-10-12
CE 8-10-12-14
AT: 10-14
GR: 6

VOGUE EXTRA BOLD, Inter
GL: 6-8-10-12-14-18-24
AC, CC, FS, TU 6-8-10-12-14-18
CR, CW: 6-8-10-12-14
CO, ET: 18
MA, ML, MO: 18-24
DA, FD 18-24-30
AT: 18-24-30-36

VOGUE EXTRA BOLD ITALIC, Inter
TU: 6-8-10-12-14-18
CW: 6-8-10-12-14

VOGUE EXTRA BOLD OBLIQUE, Inter
GL: 6-8-10-12-14-18
AC, CR: 6-8-10-12-14
MA: 8-10-12-14
ET: 18
MT: 8-10-12-14-18

VOGUE LIGHT, Inter
CC: 6-8-10-12-14-18

VOGUE LIGHT with Bold, Inter
MT: 6-8-10-12-14-18

VOGUE EXTRA BOLD with Italics, Inter
KN: 6-8-10-12-14-18

VOGUE EXTRA BOLD with Oblique, Inter
AL, AT, CL, CO, FD, FS, HO, LA, LE, ML, MO, OB, RU, TC: 6-8-10-12-14
GL, JM, PT: 6-8-10-12-14-18
RS: 6-8-10-12
CE, CS, DA, GR, TC, WR: 8-10-12-14
MT, PT, TH: 8-10-12-14-18
JE, TE, VO: 8-10-12
BX: 6-8
MA: 10-12-14-18-24

VOGUE LIGHT, Inter
TU: 6-8-10-12-14

VOGUE OBLIQUE with Bold Oblique, Inter
LE: 6-8-10
CO, DO, LA, OB: 8-10-12-14

VOGUE HEAVY with Italic, Caps Only, Inter
AB: 6-9-10

WASHINGTON TEXT No. 102, Mono
BT: 8-10-12

WAVERLEY, Inter
OB: 8-9-10-11-12-14

WAVERLEY with Italic and Small Caps, Inter
TH: 8-10-12
CW: 8-9-10-11-12-14

WEDDING TEXT, Lino
AL: 10

WEDDING TEXT No. 388, Mono
RU: 8-10-12-14-18 (2 sizes)-24
JU: 10-12-14-18 (2 sizes)
ML: 12-14-18-24

WEISS with Italic and Small Caps, Inter
MO: 6-8-10-12-14
AL: 8-9-10-11-12-14-18
TU: 8-9-10-11-12-14
MT, PT: 8-10-11-12-14-16
CR: 8-10-11-12-14-16 (Roman only)
JM: 8-10-12-14-18 (Roman only)
MT: 8-10-12-14-18
BR, DO, CS, FS: 8-10-12-14
EM: 8-10-12-14 (Roman only)
CC, RE: 8-10-12
TH: 9-10-11-12-14
GL: 10-12
MA: 14
BX: 8-10-12-14-18 (one letter)

WINCHELL No. 39, Mono
MA: 12-14-18-24

YIDDISH-HEBREW, Lino
AB: 6-8-9-11-12

New York City
- **AB** Abend Typograph Co., Inc.
- **AD** Advertising Agencies Service Co., Inc.
- **AL** Allied Typographers, Inc.
- **AC** Atlantic Linotype Co., Bklyn
- **BA** M. J. Baumwell, Typography
- **BX** Baxter and Spencer, Inc.
- **BR** Boro Typographers, Inc.
- **BU** Howard O. Bullard, Inc.
- **CC** Cooper and Cohen, Inc.
- **CE** Central Linotypers, Inc.
- **CL** Crescent Linotyping Corp.
- **CO** Commanday Bros., Inc.
- **CR** Composing Room, Inc.
- **CS** Composition Service, Inc.
- **CN** Consolidated Production Service, Inc.

New York City
- **CW** Fred. A. Crowell, Inc.
- **DM** Diamant Typographic Service, Inc.
- **DO** Downtown Typesetter, Inc.
- **EM** Empire State Craftsmen, Inc.
- **ET** A. T. Edwards Typography, Inc.
- **FS** Frederick W. Schmidt, Inc.
- **GL** Ganer Linotype Craftsmen
- **HO** F. Hochstadt Co.
- **HU** Hurst Linotypers, Inc.
- **JE** A. O. Jennings, Inc.
- **JU** Judson Type, Inc.
- **KI** King Typographic Service Corp.
- **KN** Kline Linotyping Co., Inc.
- **LA** Lafayette Linotyping, Inc.

New York City
- **LE** Oscar Leventhal, Inc.
- **MT** Master Typographers, Inc.
- **OB** Chas. D. O'Brien, Inc.
- **PT** Philmac Typographers, Inc.
- **RE** Real Typographers, Inc.
- **RS** Starkey and Co.
- **SC** Arthur B. Schirmer, Inc.
- **TE** Terry Linotyping, Inc.
- **TU** Tudor Typographers
- **TH** Type House, The
- **TS** Typographic Service Co.
- **VO** Kurt H. Volk, Inc.

Baltimore, Md.
- **BT** Baltimore Type & Comp. Corp.

Boston, Mass.
- **GR** General Composition Co.
- **MA** Machine Composition Co.
- **WR** Cecil H. Wrightson, Inc.

Buffalo, N. Y.
- **SA** Axel E. Sahlin Typog. Service

Chicago
- **AT** American Typesetting Corp.
- **BS** J. M. Bundscho, Inc.
- **ML** M & L Typesetting and Electrotyping Co.
- **MO** Monsen-Chicago, Inc.

Cincinnati, Ohio
- **FD** J. W. Ford Co.

Dayton, Ohio
- **DA** Dayton's Typographic Service

Detroit, Mich.
- **DT** Detroit Typesetting Co.

Philadelphia, Pa.
- **AJ** Alfred J. Jordan, Inc.
- **JM** John C. Meyer & Son
- **RU** Ruttle, Shaw & Wetherill, Inc.
- **TY** Typographic Service, Inc.
- **VP** Armstrong, Walter T., Inc.

Providence, R. I.
- **TC** Typesetting Service Co.

1 Art and photography

2 Photo-engraving

3 Electrotypes, duplicate plates

4 Paper

5 Printing processes

6 Binding, mailing, etc.

7 Typography

Buyers' guide, index, etc. 8

Buyers' guide, index

Push tab down, fold on this crease then fold upward on other crease over edge of page and insert in slot.

Thumb-dex patent 2300623
Other patents pending

Buyers' guide, index, etc.

559 Buyers' guide and index to services.
574 Key list for buyers' guide
581 Authors and acknowledgments section
585 Cross-reference subject index
592 Advertisers' index

Buyers' guide

Classified listings of principal services and supplies for printers, advertisers, users of direct mail, agencies, and all other graphic arts buyers

Compiled by William Havelka

Accounting mach. forms

Adams, F. G. Company

Addressing and mailing services

See also letter services

Advertisers' Mailing Service, Inc.
Ahrend Co., D. H., Inc.
Ardlee Service, Inc.
Buckley-Dement Adv. Corp.
Comet-Ray Letter Service, Inc.
Comet-Ray Offset Corporaiton
De Haan, Inc.
Dickie-Raymond, Inc.
Downing Letter Co.
Efficient Direct Mail S'v'ce., Inc.
Gardiner Binding & Mailing Co.
Globe Mail Service, Inc.
Gray, James, Inc.
Hooven Letters, Inc.
McKenzie Service, Inc.
New Era Letter Company, Inc.
St. John Associates, Inc., The

Adhesives

American Type Founders
Judson Type, Inc.

Adhesives, pressure sensitive

Kleen-Stik Products Co.

Advertising literature

See printers; printers, direct mail

Ahrend Co., D. H., Inc.
Ampco Printing Co.
Industrial Advertising Dept. of Associated Electronics Co.
Bingham Company, The
Blanchard Press
Buckley-Dement Adv. Corp.
Bundscho, J. M., Inc.
Colyer Printing Company
Comet-Ray Offset Corporation
Davis, Delaney, Inc.
Dickie-Raymond, Inc.
Empire State Craftsmen, Inc.
Githens-Sohl Corporation
Hooven Letters, Inc.
Jaffe, Herman
Laurel Process Co., Inc.
Mailograph Co., Inc.
McKenzie Service, Inc.
National Process Company, Inc.
Pantone Press, Inc.
Read Printing Co., Inc., The
Reliable Press, Inc.
Schirmer, Arthur B., Inc.
Sweeney Lithograph Co., Inc.
Tri-Arts Press, Inc.
U. S. Printing & Lithograph Co.
Vitaprint Process Corp.
Watts, Alfred Allen, Co., Inc.

Advertising presentations

Mitchell Converse Hodges

Advertising specialties

Blanchard Press
Charlton, F. M. Company, Inc.
Eagle Regalia Co.
Geiger Bros.
Hopp Press, Inc., The
McKenzie Service, Inc.
Mevi Company, The
Mitchell Converse Hodges
Ranger-Tennere, Inc.

Advertising, technical consultants

Industrial Advertising Department of Associated Electronics Co.

Advertising typographers

See Typographers, hand; Typographers, machine

Air express

Air Express Division, Railway Express Agency

Albums, general

Charlton, F. M., Company, Inc.
Fisher Bookbinding Co., Inc.
Mevi Company, The

Almanac plates

See Electrotypes

Pontiac Engr. & Electrotype Co.

Aniline inks

International Printing Ink

Aniline printing presses

Heinrich, H. H., Inc.

Artists and designers

See also Photoengravers

Aetna Photo-Engraving Co.
Apfel, Harold, Fashion Art Studio
Arrow Engraving Co., Inc.
Industrial Advertising Department of Associated Electronics Co.
Beck Engraving Company, Inc.
Graphic Photo Engraving Co.
Hagstrom Co., Inc.
Pontiac Engr. & Electrotype Co.
Sperandio's All-Art Studio
Sterling Engraving Co.
Type House, Inc., The
Weinberger-Myers
Wilbar Photo Engraving Co.

Artists' materials

Artype, Inc.
Brown, Arthur & Bro., Inc.
Devoe & Raynolds Co., Inc.
Flax, Sam
Friedman, A. I., Inc.
General Pencil Company
Grumbacher, M.
National Artist Materials Co., Inc.
Smith, Frederick

Artists' pens

Hunt Pen Co.

Badges, medals, trophies

See Advertising Specialties

Decalcomania Specialties Co.
Eagle Regalia Co.

Ben day

See Photoengravers

Aetna Photo-Engraving Co., Inc.
American Photo Engraving Co.
Arrow Engraving Co., Inc.
Atlantic Photo Engraving Co.
Beck Engraving Co., The, Inc.
Ben Day, Inc.
Chestnut St. Engraving Co.
Collier Photo Engraving Co., Inc.
Consolidated Production Service, Inc.
Empire Photo Engraving Corp.
Gatchel & Manning
Graphic Photo Engraving Co.
Harding Photo Engraving Co.
Horan Engraving Co., Inc.
Keystone Photo Engr. Corp.
Knapp Engraving Co., Inc.
Lotz Photo-Engraving Co.
Matthews Photo Engraving Co.
Mercury Photo Engravers Corp.
Pioneer-Moss, Inc.
Pontiac Engr. & Electrotype Co.
Quality Photo Engraving Co.
Royal-Jones Photo Engr. Corp.
Sterling Engraving Co.
Transograph Company
Wilbar Photo Engr. Co., Inc.
Wright Co., The

Binders, Aligno

Burkhardt Company, The
Spiral Binding Co., Inc.

Binders board mfrs.

Davey Co., The
Mead Sales Co., The

Binders, Cercla

Brewer-Cantelmo Co., Inc.
Flex Craft Bindery, The
General Binding Corp.
McKenzie Service, Inc.
Sloves Mechanical Binding Co.

Binders, Cerflex

See binders, plastic

McKenzie Service, Inc.
Mevi Company, The
Sloves Mechanical Binding Co.

Binders, Cerlox

General Binding Corp.
Fisher Bookbinding Co., Inc.
McKenzie Service, Inc.
Vita-Specialties Co.

Binders, commercial

See all classifications of binders

Aigner, G. J., Co.
Brewer-Cantelmo Co., Inc.
Burkhardt Company, The
Charlton, F. M., Company, Inc.
Commercial Bindery, Inc., The
Fisher Bookbinding Co., Inc.
Gardiner Binding & Mailing Co.
Goat, Fred, Co., Inc.
Mallon, Peter F., Inc.
McKenzie Service, Inc.

For addresses and phone numbers, see pages 574 to 580

Mevi Company, The
Michigan Book Binding Co.
National Publishing Co.
Plastic Binding Corp.
Remington Rand, Inc.
Trade Bindery, The
Watts, Alfred Allen, Co., Inc.

Binders, easel

Garraway Co., The
McKenzie Service, Inc.
Mevi Company, The
Sheppard, C. E., Co.
Swing-O-Ring, Inc.
Tauber's Bookbindery, Inc.

Binders, edition

American Book-Stratford Press, Inc.
Burkhardt Company, The
Charlton, F. M., Company, Inc.
Commercial Bindery, Inc., The
Conkey, W. B. Co.
Fisher Bookbinding Co., Inc.
Mevi Company, The
Michigan Book Binding Co.
National Publishing Co.
Oldach Company
Russell-Rutter Co., Inc.

Binders, Flex-o-coil

Aigner, G. J., Co.
Commercial Bindery, Inc., The
McKenzie Service, Inc.

Binders, Gee Gee wire coil

Commercial Bindery, Inc., The
Hall, J. C. Company, The

Binders, hand

Burkhardt Company, The
Charlton, F. M. Company, Inc.
Fisher Bookbinding Co., Inc.
Flex Craft Bindery, The
McKenzie Service, Inc.
Mevi Company, The
Michigan Book Binding Co.

Binders, limited

General Binding Corp.

Binders, loose leaf

Aigner, G. J., Co.
Allied Loose-Leaf Corp.
Brewer-Cantelmo Co., Inc.
Burkhardt Company, The
Flex Craft Bindery, The
Garraway Co., The
Goat, Fred, Co., Inc., Swing-O-Ring Division
Hygrade Printing & Stationery Co.
McKenzie Service, Inc.
Mevi Company, The
Michigan Book Binding Co.
National Publishing Co.
Philadelphia Bindery, Inc., The
Pittsburgh Bindery, The, Div. Philadelphia Bindery, Inc.
Remington Rand, Inc.
Sheppard, C. E., Co.
Smith, S. K., Co., The
Spiral Binding Co., Inc.
Swing-O-Ring, Inc.

Binders, manifold

Shoemaker & Co.

Binders, metal

See Loose Leaf Metals; Binding Metals; Bindings, Special Patents

Burkhardt Company, The
General Binding Corp.
Goat, Fred Co., Inc.
McKenzie Service, Inc.
Mevi Company, The
Michigan Book Binding Co.
Swing-O-Ring, Inc.

Binders, nu-plast

General Binding Corp.

Binders, pamphlet

See Binders Classifications; Binders, Commercial

Anchor Tag & Label Co.
Burkhardt Company, The
Charlton, F. M. Company, Inc.
Commercial Bindery, Inc., The
Fisher Bookbinding Co., Inc.
Gardiner Bind'g & Mailing Co.
McKenzie Service, Inc.
Melnick Bindery
Remington Rand Inc.
Trade Bindery, The
Watts, Alfred Allen Co., Inc.

Binders, Parallex wire

Spiral Binding Co., Inc.

Binders, plastic

Brewer-Cantelmo Co., Inc.
Flex Craft Bindery, The
Fisher Bookbinding Co., Inc.
Freedman Die Cutters, Inc.
General Binding Corp.
Hall, J. C. Company, The
McKenzie Service, Inc.
Melnick Bindery
Mevi Company, The
Michigan Book Binding Co.
Moore & Co., Inc.
Plastic Binding Corp.
Ranger-Tennere, Inc.
Sloves Mechanical Binding Co.
Spiral Binding Co., Inc.
Vita-Specialties Co.

Binders, Royal

Tauber's Bookbindery, Inc.

Binders, Spiral

See Binders, Aligno

Burkhardt Company, The
Flex Craft Bindery, The
Spiral Binding Co., Inc.

Binders, superfinish

See Book Manufacturers; Covers, Embossed, etc.

American Book-Stratford Press, Inc.
Burkhardt Company, The
Charlton, F. M. Company, Inc.
McKenzie Service, Inc.
Michigan Book Binding Co.
National Publishing Co.
Smith, S. K. Company, The

Binders, Swing-o-ring

Brewer-Cantelmo Co., Inc.
Burkhardt Company, The
Flex Craft Bindery, The
Garraway Co., The
Goat, Fred Co., Inc. Swing-O-Ring Division
McKenzie Service, Inc.
National Publishing Co.
Sloves Mechanical Binding Co.
Swing-O-Ring, Inc.

Binders, Tally-ho

Brewer-Cantelmo Co., Inc.
Flex Craft Bindery, The
Mevi Company, The
Michigan Book Binding Co.
National Publishing Co.

Binders, Tauber-tube

Commercial Bindery, Inc., The
McKenzie Service, Inc.
Michigan Book Binding Co.
Tauber's Bookbindery, Inc.

Binders, Wire-o

Mevi Company, The
Michigan Book Binding Co.
National Publishing Co.

Binding metals

See Bindings (Special Patents) Licensors

General Binding Corp.
Goat, Fred Co., Inc.

Bindings, special patents, licensors

General Binding Corp.
Mevi Company, The
Swing-O-Ring, Inc.

Block printing materials

Hunt Pen Co.

Blotters

See Paper Distributors

Bulkley, Dunton & Co.
Garraway Co., The
Lindenmeyr, Henry & Sons
Majestic Paper Corp.
Millar, Geo. W. and Co., Inc.
Royal Paper Corp.
Tested Sales Producers, Inc.
Vitaprint Process Corp.
Walker, Goulard, Plehn Co.

Blotters, kangaroo

Reliable Press, Inc.

Board, binders

Bulkley, Dunton & Co.
Holliston Mills, Inc.
Mead Sales Co., The
Millar, Geo. W. & Co., Inc.
Walker, Goulard, Plehn Co.

Bond papers

See Papers, mfrs, bond and ledger

Book cloths

Holliston Mills, Inc.

Book covers

See Binders, Edition; Book mfrs., Binders, Superfinish; Covers, Embossed

American Book-Stratford Press, Inc.
Brewer-Cantelmo Co., Inc.
Bulkley, Dunton & Co.
Burkhardt Company, The
Charlton, F. M. Company, Inc.
Fisher Bookbinding Co., Inc.
Flex Craft Bindery, The
Freedman Die Cutters, Inc.
Mevi Company, The
Michigan Book Binding Co.
National Publishing Co.
Plastic Binding Corp.
Russell-Rutter Co., Inc.
Smith, S. K. Co., The
Vita Specialties Co.

Book manufacturers

See also Printers, Periodical and Publication; Binders, Edition

American Book-Stratford Press, Inc.
Blanchard Press
Brown Brothers, Linotypers
Charlton, F. M. Company, Inc.
Colyer Printing Company
Conkey, W. B. Co.
Fisher Bookbinding Co., Inc.
McKibbin, George & Son
Moore & Co., Inc.
National Publishing Co.
Russell-Rutter Co., Inc.
Ruttle, Shaw & Wetherill, Inc.
Westcott & Thompson, Inc.

Book typographers

Brown Brothers, Linotypers

Books, toy

Grinnell Lithograph Co., Inc.

Border material

Allied Typographers, Inc.

For addresses and phone numbers, see pages 574 to 580

Ever Ready Labels

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AD, POSTER AND PACKAGE LABELS



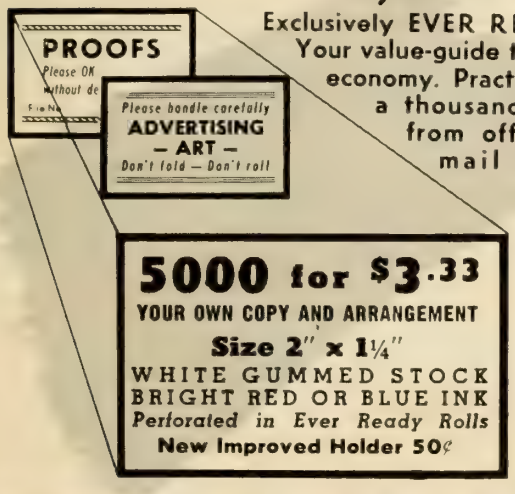
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American Type Founders
Intertype Corporation
Mergenthaler Linotype Co.
Lanston Monotype Co.
Ludlow Typograph Co.

Boxes, folding

Forbes Lithograph Mfg. Co.

Boxes, reuse

Smith, S. K., Co., The

Box tops, lithographed and box wraps

Columbia Lithographic Co., Inc.
Comet-Ray Offset Corporation
Consolidated Litho. Corp.

Brass dies

American Type Founders
April Typesetting Company

Brief cases

Burkhardt Company, The
Remington Rand Inc.
Mevi Company, The

Business forms

Laurel Systems Co., Inc.
Watts, Alfred Allen Co., Inc.

Business forms systems consultants

Watts, Alfred Allen Co., Inc.

Calendars

Charlton, F. M. Company, Inc.
Columbia Lithographic Co., Inc.
Flex Craft Bindery, The
Forbes Lithograph Mfg. Co.
Geiger Bros.
Hopp Press, Inc., The
McKenzie Service, Inc.
U. S. Printing & Lithograph Co.

Calendar plates

Pontiac Engr. & Electrotype Co.

Cameras, reproduction lithography, photo engraving

Lanston Monotype Machine Co.
Huebner Laboratories

Carbon interleaved forms

Laurel Systems Co., Inc.

Carton typographers

King Typographic Service

Celluloid sheets

Transparent, Color

Aigner, G. J. Co.
Ben Day, Inc.
Brewer-Cantelmo Co., Inc.
Brown, Arthur & Bro., Inc.
Mevi Company, The
Vita-Specialties Co.

Cellulose acetate sheets

Rosco Laboratories

Cellulose card holders

Aigner, G. J. Co.

Charts

Austin, O. Co., The
Columbia Lithographic Co., Inc.
Hagstrom Co., Inc.
Hopp Press, Inc., The
Pantone Press, Inc.
Wheeler Chart Co., Inc., The

Charts, color

Ben Day, Inc.

Cloth-lithographing

Sweeney Lithograph Co., Inc.

Collotype

See Printers, photogelatin

Color cameras

Huebner Laboratories

Color process plates

See Photoengravers

Aetna Photo-Engraving Co., Inc.
American Colortype Co.
Arrow Engraving Co.
Beck Engraving Co., The, Inc.
Chestnut St. Engraving Co.
Collier Photo Engraving Co.
Consolidated Production Svce.
Empire Photo Engraving Corp.
Gatchel & Manning
Graphic Photo Engraving Co.
Harding Photo Engraving Co.
Horan Engraving Co., Inc.
Keystone Photo Engr. Corp.
Jahn & Ollier Engraving Company
Knapp Engraving Co., Inc.
Lotz Photo-Engraving Co., Inc.
Matthews Photo Engraving Co.
Mercury Photo Engravers Corp.
Pioneer-Moss, Inc.
Pontiac Engr. & Electrotype Co.
Quality Photo Engraving Co.
Royal-Jones Photo Engr. Corp.
Sterling Engraving Co.
Wilbar Photo Engraving Co.
Wright Co., The

Colors, fine artists, oil

Brown, Arthur & Bro., Inc.
Friedman, A. I., Inc.

Composing room equipment

American Type Founders
Hamilton Manufacturing Company

Composition, foreign languages

Allied Typographers, Inc.
Atlantic Linotype Company
Baumwell, M. J., Typography
Boro Typographers, Inc.
Bullard, Howard O., Inc.
Central Linotypers, Inc.
Cincinnati Typesetting Co., The
Commanday Bros., Inc.
Coxhead, Ralph C. Corporation
Diamant Typographic Service
Empire State Craftsmen, Inc.
General Composition Company
Jennings, Albert O., Inc.
King Typographic Svce. Corp.
Meyer, John C. & Son
Monsen-Chicago, Inc.
Real Typographers, Inc.
Salley & Collins
Schirmer, Arthur B., Inc.
Wrightson, Cecil H., Inc.

Composition, hand

See Typographers, hand

Composition, machine

See Typographers, machine

Composition service

See Typographers, machine

Composition, technical

See typographers, machine
Schirmer, Arthur B., Inc.

Consultants

See Reproduction Process Consultants

Containers, transparent

United States Envelope Co.

Contest judging

See also Addressing and Mailing, etc.

Advertisers' Mailing Service, Inc.
Ahrend, D. H. Co., Inc.
Buckley-Dement Adv. Corp.
De Haan, Inc.

Continuous form printing

Moore Business Forms, Inc.
Watts Co., Alfred Allen, Inc.

Convention exhibits

Columbia Lithographic Co., Inc.
Mevi Company, The

Copy, editorial, preparation

Ahrend, D. H. Co., Inc.
Associated Electronics Co., Industrial Advertising Dept.
Dickie-Raymond, Inc.
Pantone Press, Inc.

Covers, catalog

See Book Mfrs.; Binders, Loose Leaf; Binders, Edition; Binders Board Mfrs.; Covers, Embossed, Superfinished

Aigner, G. J. Co.
Alling & Cory Company, The
American Book-Stratford Press, Inc.
American Colortype Co.
Brewer-Cantelmo Co., Inc.
Bulkley, Dunton & Co.
Burkhardt Company, The
Charlton, F. M. Company, Inc.
Columbia Lithographic Co., Inc.
Commercial Bindery, Inc., The
Davis, Delaney, Inc.
Eastern Corporation
Fisher Bookbinding Co., Inc.
Flex Craft Bindery, The
McKenzie Service, Inc.
Melnick Bindery
Mevi Company, The
Michigan Book Binding Co.
National Publishing Co.
Remington Rand, Inc.
Russell-Rutter Co., Inc.
Sheppard, C. E. Co.
Smith, S. K. Co., The
Vita Specialties Co.
Vitaprint Process Corp.

Covers, celluloid

Aigner, G. J. Co.
Brewer-Cantelmo Co., Inc.
Bulkley, Dunton & Co.
Burkhardt Company, The
Hopp Press, Inc., The
Mevi Company, The
Michigan Book Binding Co.
Vita Specialties Co.

Covers, embossed and superfinished

See Binders, Superfinish

Aigner, G. J. Co.
American Book-Stratford Press, Inc.
Bulkley, Dunton & Co.
Burkhardt Company, The
McKenzie Service, Inc.
Mevi Company, The
Michigan Book Binding Co.
National Publishing Co.
Smith, S. K. Company, The

Covers, sample

Brewer-Cantelmo Co., Inc.
Burkhardt Company, The
Charlton, F. M. Company, Inc.
Fisher Bookbinding Co. Inc.
Flex Craft Bindery, The
McKenzie Service, Inc.
Mevi Company, The
Michigan Book Binding Co.

Creasing

Freedman Die Cutters, Inc.

For addresses and phone numbers, see pages 574 to 580

THUMB-DEX...the new indexing system

REVOLUTIONARY 1

***THUMB-DEX'** unique features enable book to be indexed before it is trimmed or bound. This is important from an economical and time standpoint.

NEW AND NOVEL 2

THUMB-DEX' improved new style as illustrated in this current edition of Production Yearbook has been infinitely improved beyond its original design.

SIMPLE TO HANDLE 3

THUMB-DEX is a delight to the user. No messy paste or glue-just fold over and insert. See for yourself—with actual "Production Yearbook" tabs how easy it is. It lends itself to a variety of displays and special arrangements.

ATTRACTIVE 4

THUMB-DEX has the "new look" streamlined as a treat to the eye and something to behold. It is unlike anything previously available.

VARIETY OF USES 5

THUMB-DEX can be adapted to a wide range of uses for catalogs, brochures, pamphlets, publications, magazines, annuals, reference works, manuals.

ECONOMICAL 6

THUMB-DEX costs less than any other comparable system of indexing. Check on your costs—and see what extra advantages you'll be getting from using this unique method.

DOUBLE VALUE 7

THUMB-DEX in its new fold-over type, gives you indexing on both sides of tab at a single printing operation. This is another unique feature.

EXTRA ADVERTISING MEDIUM 8

THUMB-DEX offers the only method that gives to an advertiser a great number of additional saleable, preferred positions in a manual or yearbook.

*Thumb-Dex pat. 2300623. Other pats. pend.

GAMMA DISPLAYS, INC. • 92 LIBERTY ST., NEW YORK 6, N. Y. • PHONE CORTLANDT 7-9256

Creative direct advertising

Ahrend, D. H. Co., Inc.

Decalcomanias

Austin, O. Co., The
Decalcomania Specialties Co.
National Decalcomania Corporation
Palm Bros. Decalcomania Co.,
Palm, Fletcher & Co.

Deckling

Pebbling Company, Inc., The

Die-cutting

See Mounting and Finishing

Freedman Cut-Outs
Freedman Die Cutters, Inc.
Lansky Die Cutting Co.
McKenzie Service, Inc.
Mevi Co., The
New Era Manufacturing Co.
Ranger-Tennere, Inc.

Die stampers

Ridley, John Walter

Dies, Steel Rule

Freedman Die Cutters, Inc.

Direct mail

See Addressing; Printers, Direct Mail; Letter Services

Advertisers' Mailing Service, Inc.
Ahrend, D. H. Co., Inc.
Ampco Printing Co.
Ardlee Service, Inc.
Blanchard Press
Buckley-Dement Adv. Corp.
Charlton, F. M. Company, Inc.
Colyer Printing Company
Comet-Ray Letter Service, Inc.
Comet-Rav Offset Corporation
Davis, Delaney, Inc.
Dee, Laura
De Haan, Inc.
Dickie-Raymond, Inc.
Efficient Direct Mail Service, Inc.
Empire State Craftsmen, Inc.
Hooven Letters, Inc.
Jaffe, Herman
McKenzie Service, Inc.
New Era Letter Company, Inc.
Pantone Press, Inc.
Reply-O-Letters
St. John Associates, Inc., The
Tri-Arts Press, Inc.

Display cards

Blanchard Press
Charlton, F. M. Company, Inc.
Columbia Lithographic Co., Inc.
Colyer Printing Company
Comet-Ray Offset Corporation
Consolidated Lithographic Corporation
Decalcomania Specialties Co.
Freedman Cut-Outs
Garraway Co., The
Hayden, E. J. & Co., Inc.
Hopp Press, Inc., The
Kindred, MacLean & Company, Inc.
Masta Displays, Inc.
McKenzie Service, Inc.
Mevi Company, The
Pantone Press, Inc.
Sweeney Lithograph Co., Inc.
Tooker Lithograph Co., Inc.
U. S. Printing & Lithograph Co.
Vitaprint Process Corp.

Display fabrics

Oakland Textile Co.

Displays, embossed and moulded

Hayden, E. J. & C o., Inc.
Lansky Die Cutting Co.
Mevi Company, The
Smith, S. K. Co., The

Displays, flasher

Austin, O. Co., The
Hayden, E. J. & Co., Inc.
Tooker Lithograph Co., Inc.

Displays, fronts, floats and booths

Hayden, E. J. & Co., Inc.

Displays, glass

Austin, O. Co., The
Hayden, E. J. & Co., Inc.

Displays, itinerant

See Displays, Fronts, Floats and Booths

Hayden, E. J. & Co., Inc.

Displays, merchandising

Copeland Displays, Inc.
Davis, Delaney, Inc.
Forbes Lithograph Mfg. Co.
Hayden, E. J. & Co., Inc.
Mevi Company, The
Pantone Press, Inc.
U. S. Printing & Lithograph Co.
Sweeney Lithograph Co., Inc.
Vitaprint Process Corp.

Displays, metal and wire

Window, Floor, Counter
American Colortype Co.
Hayden, E. J. & Co., Inc.

Displays, motion

Hayden, E. J. & Co., Inc.

Displays, permanent

Hayden, E. J. & Co., Inc.

Displays, plastic

Printloid, Inc.
Ranger-Tennere, Inc.

Displays, point of purchase

See also lithographers; silk screen

Forbes Lithograph Mfg. Co.
Simon-Adhesive Products Corp.
Sweeney Lithograph Co., Inc.
U. S. Printing & Lithograph Co.

Display services

See all other Display classifications

Forbes Lithograph Mfg. Co.
Pantone Press, Inc.
Sweeney Lithograph Co., Inc.
U. S. Printing & Lithograph Co.

Display signs

Columbia Lithographic Co., Inc.
Decalcomania Specialties Co.
Hayden, E. J. & Co., Inc.
Masta Displays, Inc.
Mevi Company, The
Vitaprint Process Corp.

Displays, window and counter

American Colortype Co.
Austin, O. Co., The
Columbia Lithographic Co., Inc.
Comet-Ray Offset Corporation
Consolidated Lithog'ph'g. Corp.
Copeland Displays, Inc.
Forbes Lithograph Mfg. Co.
Freedman Cut-Outs
Garraway Co., The
Hayden, E. J. & Co., Inc.
Hopp Press, Inc., The
Kindred, MacLean & Company, Inc.
Lutz & Sheinkman
Masta Displays, Inc.
McKenzie Service, Inc.
Ranger-Tennere, Inc.
Sweeney Lithograph Co., Inc.
Tooker Lithograph Co., Inc.
U. S. Printing & Lithograph Co.
Vitaprint Process Corp.

Drawing inks

See Drawing Materials

Brown, Arthur & Bro., Inc.
Decalcomania Specialties Co.

Drawing materials

Brown, Arthur & Bro., Inc.
Friedman, A. I., Inc.
General Pencil Company
Smith, Frederick

Drawing tables

Hamilton Manufacturing Company

Duplicate originals

See Duplicate plates, solid copper

Duplicate plates

See Electrotypes; Stereotypes and Mats

Consolidated Production Service, Inc.
Cresset Co.
Midtown Plate Correction Corp.
Pontiac Engr. & Electrotype Co.
Reilly Electrotype Co.

Duplicate plates, solid copper

Partridge & Anderson Co.
Rapid Electrotype Co., The
Reilly Electrotype Co.
Royal Electrotype Co.

Duplicating machines

Davidson Mfg. Co.

Electro and cut files

Hamilton Manufacturing Company

Electrotype moulding material

Tenak Products, Inc.

Electrotypes

Ace Electrotype Co., The
American Electrotype Co., The
Ansla Company, The
Art Electrotype Co., The
Buntin, J. T., Inc.
Central Electrotype Co., The
Cincinnati Typesetting Co., The
Consolidated Production Service, Inc.
Cresset Co.
Crosley, Thos. H. Co., The
Electrotype Correction Co., Inc.
Flower Steel Electrotype Co.
Gilliams & Rubin, Inc.
Globe Electrotype Co., Inc.
Globe Engraving & Electrotyping Company
Kingsboro Electrotype Corp.
Knickerbocker Electrotype Co.
National Electrotype Co.
New York Electrotyping Co.
Partridge & Anderson Co.
Pontiac Engr. & Electrotype Co.
Rapid Electrotype Co., The
Reilly Electrotype Co.
Royal Electrotype Co.

Embossed sign equipment

See also Embossing

Hayden, E. J. & Co., Inc.
Smith, S. K. Co., The

Embossing

See Engravers, Steel and Copper; Commercial Stationery Engravers; Genuine Engraved Stationery; Covers, Catalog; Binders, Edition

For addresses and phone numbers, see pages 574 to 580

Aigner, G. J., Co.
Burkhardt Company, The
Cameo Die & Label Co.
Colyer Printing Company
Fisher Bookbinding Co., Inc.
Lansky Die Cutting Co.
Lithographers' Finishing Co.
McKenzie Service, Inc.
Mevi Company, The
Smith, S. K. Company, The
Solfleisch, Henry W. & Co., Inc.

Embossing, roller
See also Embossing

Bulkley, Dunton & Co.

Engraved stationery genuine
See Engravers, Steel and Copper Plate

Hooven Letters, Inc.
Imperial Engraving Co., Inc.
Ridley, John Walter
Solfleisch, Henry W. & Co., Inc.

Engravers, steel and copper plate and die stampers
Globe Engr. & Electrotyping Co.
Hill, R. O. H., Inc.
Hooven Letters, Inc.
Ridley, John Walter
Solfleisch, Henry W. & Co., Inc.

Engravings, cylindrical
Letterpress and gravure

Quality Photo Engraving Co.

Enlargements, photo
See Photographers; Murals

Garraway Co., The
Pontiac Engr. & Electrotype Co.
Russo, F. A., Inc.

Envelopes
Alling & Cory Company, The
American Envelope Mfg. Co.
Bulkley, Dunton & Co.
Direct Mail Envelope Co., Inc.
Eastern Corporation
Ecusta Paper Corporation
Exclusive Envelope Corp.
General Envelope
Gray Envelope Mfg. Co., Inc., The
Hygrade Printing & Stationery Co.
Lindenmeyr, Henry & Sons
Majestic Paper Corp.
McKenzie Service, Inc.
Millar, Geo. W. & Co., Inc.
Paper Center, Inc., The
Royal Paper Corp.
Schlosser Paper Corp.
United States Envelope Co.
Uptown Paper & Envel. Corp.
Wainick Envelope Co.

Envelopes, 2-compartment
American Envelope Mfg. Co.

Envelopes, catalog
See also Envelopes

Alling & Cory Company, The
American Envelope Mfg. Co.
Bulkley, Dunton & Co.
Direct Mail Envelope Co., Inc.
Exclusive Envelope Corp.
Old Colony Envelope Co.
Oneida Paper Products, Inc.
Schlosser Paper Corp.
United States Envelope Co.

Envelopes, cellophane
See also Envelopes

American Envelope Mfg. Co.
Direct Mail Envelope Co., Inc.
Exclusive Envelope Corp.
Royal Envelope Corp.
United States Envelope Co.
Uptown Paper & Envel. Corp.

Envelopes, celluloid
See also Envelopes

Aigner, G. J. Co.
Brewer-Cantelmo Co., Inc.
Burkhardt Company, The
Direct Mail Envelope Co., Inc.
Hayden, E. J. & Co., Inc.
United States Envelope Co.
Vita Specialties Co.

Envelopes, hand-fold
See also Envelopes

Alling & Cory Company, The
American Envelope Mfg. Co.
Brewer-Cantelmo Co., Inc.
Bulkley, Dunton & Co.
Direct Mail Envelope Co., Inc.
Exclusive Envelope Corp.
United States Envelope Co.
Uptown Paper & Envel. Corp.

Envelope manufacturers
See Envelopes; Paper mfrs., Envelopes

Alling & Cory Company, The
American Envelope Mfg. Co.
Direct Mail Envelope Co., Inc.
Exclusive Envelope Corp.
Old Colony Envelope Co.
Royal Paper Corp.
United States Envelope Co.
Uptown Paper & Envel. Corp.

Envelope printing
See also Envelopes

Alling & Cory Company, The
American Envelope Mfg. Co.
Direct Mail Envelope Co., Inc.
Exclusive Envelope Corp.
Hygrade Printing & Stationery Co.
McKenzie Service, Inc.
Royal Paper Corp.
United States Envelope Co.
Uptown Paper & Envel. Corp.
Wainick Envelope Company

Envelopes, tag and receipt
Standard Tag Company

Envelopes, transparent
See Envelopes, Cellophane

Direct Mail Envelope Co., Inc.
Hayden, E. J. & Co., Inc.
United States Envelope Co.
Vita-Specialties Co.

Exhibits
See Display classifications

Hayden, E. J. & Co., Inc.

Express, air
Air Express Division
Railway Express Agency

Eyeletting
Shoemaker & Co.

Fabricating
Ranger-Tennere, Inc.

Films, business
RKO Pathe, Inc.

Foil, printed and embossed
See Gold Stamping

Bulkley, Dunton & Co.
Davis, Delaney, Inc.
Ever Ready Label Corporation
Smith, S. K. Co., The

Folding machines and automatic feeds
Davidson Mfg. Co.

Folding-miniature
Melnick Bindery

Foreign language typesetting
See Composition, foreign

Foundry lock-up
See Typographers, Hand; Typographers, Machine

Fund raising and premium plans
Jaffe, Herman

Galleys
Graphic Arts Products

Gluing machines
Potdevin Machine Co.

Gold stamping
See Binders, Edition; Binders, Hand; Book Mfrs.

Aigner, G. J. Co.
Brewer-Cantelmo Co., Inc.
Burkhardt Company, The
Charlton, F. M. Company, Inc
Commercial Bindery, Inc., The
Fisher Bookbinding Co., Inc.
Hayden, E. J. & Co., Inc.
McKenzie Service, Inc.
Mevi Company, The
Smith, S. K. Co., The

Grafa-tone
Empire Photo Engraving Corp.
Graphic Photo Engraving Co.
Keystone Photo Engr. Corp.
Wilbar Photo Engraving Co.

Gravure
See Printers, Gravure, Sheet-Fed; Printers, Roto.

Gravure Press Manufacturers
Champlain Company, Inc.
Heinrich, H. H., Inc.
Huebner Laboratories
Illinois Photo Gravure Co.

Gravure, copper
Dillon, J. C., Co.

Intaglio Service Corp.
Photogravure and Color Co.

Gravure inks
See Ink, printing, mfrs.

International Printing Ink

Gravure, sheet fed
See Printers, gravure, sheet-fed; Printers, Rotogravure

Greeting cards
American Artists Group
Columbia Lithographic Co., Inc.
Grinnell Lithograph Co., Inc.
Lutz & Sheinkman
McKenzie Service, Inc.

Gummed specialties
Artype Inc.
Decalcomania Specialties Co.
McKenzie Service, Inc.
Millar, Geo. W. & Co., Inc.

Gumming
Carlson, Frank P., Inc.
Commercial Bindery, Inc., The
Mid States Gummed Paper Co.

Hand composition
See Typographers, hand

Hoovenized letters
Hooven Letters, Inc.

Illustrations, historic
Bettmann Archive, The

For addresses and phone numbers, see pages 574 to 580

Image reversers
Huebner Laboratories

Imprinting
Austin, O. Co., The
Columbia Lithographic Co., Inc.
Efficient Direct Mail S'v'ce., Inc.
McKenzie Service, Inc.

Indexes, celluloid and leather
Aigner, G. J. Co.
Burkhardt Company, The
Gamma Displays, Inc.
Mevi Company, The
Remington Rand Inc.

Indexes, Thumb-dex
Gamma Displays, Inc.

Indexing
Aigner, G. J., Co.
Gamma Displays, Inc.
Greater N. Y. Ruling Co.

Industrial finishes
See Ink, printing, mfrs.
General Printing Ink Division Sun Chemical Corporation
Sinclair and Valentine Co.

Industrial photography
Nesmith, R. I.

Ink, printing, mfrs.
American Type Founders.
General Printing Ink Division Sun Chemical Corporation
Huber, J. M., Inc.
International Printing Ink
Siebold, J. H. & G. B., Inc.
Sinclair and Valentine Co.
Roberts, Lewis, Inc.

Inks, metallic
See Ink, printing, mfrs.
General Printing Ink Division Sun Chemical Corporation
International Printing Ink
Sinclair and Valentine Co.

Inks, offset
See Ink, printing, mfrs.

Ink, waterproof drawing
Brown, Arthur & Bro., Inc.
Friedman, A. I., Inc.

Intaglio printing plates
Intaglio Service Corp.

Kleen-stik
Carlson, Frank P. Co., Inc.
Commercial Bindery, Inc., The
Empire State Craftsmen, Inc.
Ever Ready Label Corporation

Labels
American Colortype Co.
Cameo Die & Label Co.
Columbia Lithographic Co., Inc.
Colyer Printing Company
Consolidated Lithographing Corporation
Ever Ready Label Corporation
General Tag Co.
Jaffe, Herman
New Era Manufacturing Co.
Palm Bros. Decalcomania Co.
U. S. Printing & Lithograph Co.

Labels, embossed
See also Labels
Cameo Die & Label Co.
Consolidated Lithographing Corporation
U.S. Printing & Lithographic Co.

Labels, pressure sensitive
Simon Adhesive Products Corp.

Labels, roll
See also Labels
Ever Ready Label Corporation
New Era Manufacturing Co.

Labels, transparent
Austin, O. Co., The
Decalcomania Specialties Co.
Ever Ready Label Corporation
New Era Manufacturing Co.
Palm Bros. Decalcomania Co.

Lacquer,
Colored, grease and moisture-resistant
Sinclair and Valentine Co.

Lacquer, paper
Bulkley, Dunton & Co.

Lacquering
Lithographers' Finishing Co.
Vitaprint Process Corp.

Laminating
Bulkley, Dunton & Co.
Hopp Press, Inc., The
Melnick Bindery
Ranger-Tennere, Inc.

Laminating machines
Potdevin Machine Co.

Layout, advertising
See Artists, Designers; Typographers, Hand
Advertising Agencies' S'v'ce., Co., Inc.
Allied Typographers, Inc.
Armstrong, Walter T., Inc.
Industrial Advertising Department of Associated Electronics Co.
Baumwell, M. J., Typography
Commanday Bros., Inc.
Diamant Typographic Service.
Downtown Typsetter, Inc., The
Edwards, A.T.Typography, Inc.
Fototype Co.
General Composition Co.
Jennings, Albert O., Inc.
Master Typographers, Inc.
Meyer, John C. & Son
Pantone Press, Inc.
Philmac Typographers
Pontiac Engr. & Electrotype Co.
Stuyvesant Press Corporation
Tri-Arts Press, Inc.
Type House, Inc., The
Wrightson, Cecil H., Inc.

Leather, artificial
Holliston Mills, Inc.
Holyoke Card and Paper Co.
Schlosser Paper Corp.
Smith, S. K. Co., The

Letterheads, Engraved
See also Addressing and Mailing Services; Direct Mail; Printers, Direct Mail
Hooven Letters, Inc.
Ridley, John Walter
Solfleisch, Henry W. & Co., Inc.

Letterheads, lithographed
Adams, F. G. Company
Ampco Printing Co.
Columbia Lithographic Co., Inc.
Comet-Ray Offset Corporation
Dennison & Sons
Hall, The J. C. Company
Hooven Letters, Inc.
U. S. Printing & Lithograph Co.

Letter services
See also Addressing and Mailing Services; Direct Mail; Printers, Direct Mail
Advertisers' Mailing Service, Inc.
Ahrend, D. H. Co., Inc.
American Automatic Typewriter Co.
Buckley-Dement Adv. Corp.
Comet-Ray Letter Service, Inc.
Comet-Ray Offset Corporation
De Haan, Inc.
Dickie-Raymond, Inc.
Efficient Direct Mail S'v'ce., Inc.
Gray, James, Inc.
Hooven Letters, Inc.
McKenzie Service, Inc.
New Era Letter Company, Inc.
St. John Associates, The, Inc.

Light integrating instruments
Electronic Mechanical Products Company

Linotype composition
See Typographers, machine

Linotype matrices and supplies
Intertype Corp.
Mergenthaler Linotype Co.

Literature, preparation of technical
Industrial Advertising Department of Associated Electronics Company

Lithographers
See Lithographers, Photo Offset
American Colortype Co.
Ardlee Service, Inc.
Brett Lithographing Co.
Columbia Lithographic Co., Inc.
Comet-Ray Letter Service, Inc.
Comet-Ray Offset Corporation
Consolidated Lithographing Corporation
Crane-Howard Lithograph Co., The
De Haan, Inc.
Dennison & Sons
Federal Lithograph Co.
Forbes Lithograph Mfg. Co.
Gugler Lithographic Company, The
Hall, The J. C. Company
Haynes Lithograph Co., Inc.
Hopp Press, Inc., The
Jaffe, Herman
Kindred, MacLean & Company, Inc.
Laurel Process Co., Inc.
Lutz & Sheinkman
Mallon, Peter F., Inc.
National Process Company, Inc.
Providence Lithograph Co.
Rode & Brand, Inc.
Rogers-Kellogg-Stillson, Inc.
Safran Printing Co.
Strobridge Lithographing Co.
Sweeney Lithograph Co., Inc.
Tooker Lithograph Co., Inc.
Trautmann, Bailey & Blampey
U. S. Printing & Lithograph Co.
William & Heintz Co.
Wright Photo-Offset Co., Inc. The
Zeese-Wilkinson-Dillon Co.

Lithographers, photo offset
See also Lithographers
Academy Photo Offset, Inc.
Ampco Printing Co.
Ardlee Service, Inc.
Benart Mail Sales Service, Inc.
Columbia Lithographic Co., Inc.
Comet-Ray Offset Corporation
Consolidated Lithographing Corporation.
Crafton Graphic Co., Inc.
De Haan, Inc.
Efficient Direct Mail S'v'ce., Inc.

For addresses and phone numbers, see pages 574 to 580

Electro Sun Co., Inc.
General Offset Co., Inc.
Graphic Arts Process Company
Gray, James, Inc.
Griffin Miller Bates Co., Inc.
Hinkhouse, Inc.
Hooven Letters, Inc.
Hopp Press, The, Inc.
Laurel Process Co., Inc.
Lutz & Sheinkman
Magill-Weinsheimer Company
McGraw-Phillips Printing Co.
New Era Lithograph Company, Inc.
Newman-Rudolph Lithographing Co.
Spaulding-Moss Co.
Sweeney Lithograph Co., Inc.
U.S. Printing & Lithographing Company
Watts Co., Alfred Allen, Inc.

Lithographers, poster

Columbia Lithographic Co., Inc.
Forbes Lithograph Mfg. Co.
Hopp Press, The, Inc.
Lutz & Sheinkman
Schneider Press, Inc.
Strobridge Lithographing Co.,
Sweeney Lithograph Co., Inc.
Tooker Lithograph Co., Inc.

Lithographic inks

See Ink, printing, mfrs.
General Printing Ink Division Sun Chemical Corp.
International Printing Ink
Siebold, J. H. & G. B., Inc.
Sinclair and Valentine Co.

Lithographic supplies

International Printing Ink
Sinclair and Valentine Co.

Lithographers, three dimensional

Dimensional Arts, Inc.

Luxometer

Electronic Mechanical Products Company

Machine composition

See Typographers, Machine

Machine, roll feed printing and fabricating

American Type Founders
Heinrich, H. H., Inc.
Potdevin Machine Co.

Mailing

See Addressing; Printers, Direct Mail; Letter Services
Ahrend Co., D. H., Inc.
Buckley-Dement Adv. Corp.
Charlton, F. M. Company, Inc.
Comet-Ray Offset Corporation
Comet-Ray Letter Service, Inc.
Commercial Bindery, The, Inc.
De Haan, Inc.
Dickie-Raymond Inc.
Efficient Direct Mail Service
Gardiner Binding & Mailing Co
Hooven Letters, Inc.
McKenzie Service, Inc.
New Era Letter Company, Inc.
St. John Associates, The, Inc.

Mailing lists

See also Addressing and Mailing
Advertisers' Mailing Service, Inc.
Buckley-Dement Adv. Corp.
De Haan, Inc.
Dickie-Raymond Inc.
Efficient Direct Mail S'v'ce., Inc.

Mailing machines

Pitney-Bowes, Inc.

Make-ready board for mechanical overlays

Cantine, Martin, Co., Inc., The

Mailing and processing radio releases

See also Addressing and Mailing
Ahrend, D. H. Co., Inc.
Buckley-Dement Adv. Corp.
Comet-Ray Letter Service, Inc.
De Haan, Inc.
Dickie-Raymond Inc.

Manufacturers of bookbinding machinery

Sheridan, T. W. & C. B., Co.

Map typesetters

King Typographic Service

Maps

Hagstrom Co., Inc.
Lutz & Sheinkman
William & Heintz Co.

Mat-making and mat services

Buntin, J. T., Inc.
Cincinnati Typesetting Co.
Cresset Co.
Electrotype Correction Co., Inc.
Flower Steel Electrotype Co.
Gilliams & Rubin, Inc.
Midtown Plate Correction Corp.
National Electrotype Co.
Partridge & Anderson Co.
Rapid Electrotype Co., The
Reilly Electrotype Co.
Royal Electrotype Co.

Mat stock manufacturers

Wood Flong Corporation

Matrices

Intertype Corporation
Mergenthaler Linotype Co.

Metal decorating inks

General Printing Ink Division, Sun Chemical Corp.
International Printing Ink
Sinclair and Valentine Co.

Metered Mailing Machines

See Mailing Machines
Pitney-Bowes, Inc.

Mimeographing

See also Addressing; Printers, Direct Mail; Letter Services
Advertisers' Mailing Service, Inc.
Ahrend, D. H. Co., Inc.
Buckley-Dement Adv. Corp.
Comet-Ray Letter Service, Inc.
Comet-Ray Offset Corporation
De Haan, Inc.
Dickie-Raymond Inc.
Efficient Direct Mail Service
Hooven Letters, Inc.
St. John Associates, The, Inc.
Standard Service

Mirrors, decorated, advertising design

Austin Co., The O.

Mirrors, transparent

Austin Co., The O.

Monotype composition

See Typographers, Machine

Moulding material, electrotypes

Tenak Products, Inc.

Mounting and finishing

Charlton, F. M. Company, Inc.
Freedman Cut-Outs
Freedman Die Cutters, Inc.
Lansky Die Cutting Co.
McKenzie Service, Inc.
Mevi Company, The
Russo, F. A., Inc.
Tauber's Bookbindery, Inc.

Multigraphing

See Addressing, Mailing
Advertisers' Mailing Service, Inc.
Ahrend, D. H. Co., Inc.
Buckley-Dement Adv. Corp.
Comet-Ray Letter Service, Inc.
Comet-Ray Offset Corporation
De Haan, Inc.
Dickie-Raymond Inc.
Downing Letter Co.
Efficient Direct Mail S'v'ce., Inc.
Globe Mail Service, Inc.
Gray, James, Inc.
Hooven Letters, Inc.
McKenzie Service, Inc.
New Era Letter Company, Inc.
Pioneer Letter Co.
St. John Associates, The, Inc.
Standard Service

Multigraph plates

See Electrotypes
Bowne & Turner
Flower Steel Electrotype Co.
New York Electrotyping Co.
Pontiac Engr. & Electrotype Co.

Multiple copy, carbon-interleaved forms mfrs.

Watts, Alfred Allen Co., Inc.

Multilith

Dickie-Raymond Inc.

Murals

Hagstrom Co., Inc.

Nameplates, decalcomanias

See also Decalcomanias
Austin Co., The O.
Decalcomania Specialties Co.
Hopp Press, The, Inc.
Palm Bros. Decalcomania Co.

Nelco typed letters

New Era Letter Company, Inc.

Neon dealer signs

Artkraft Sign Co.

Office furniture

Orthwine, Rudolph, Corp.
Remington Rand Inc.

Offset copy, typewriters for

Coxhead Corporation, Ralph C.
International Business Machines Corporation
Remington Rand, Inc.
Underwood Corporation

Offset inks

See Ink, printing, mfrs.

Optical devices

Huebner Laboratories

Optical goods, mfrs. and distributors

Huebner Laboratories

Oriental language typesetters

King Typographic Service

Overlay board

Cantine, Martin Co., Inc., The

For addresses and phone numbers, see pages 574 to 580

Package designers
See Artists and Designers
Lewis, Ben
Smith Co., The S. K.

Package inks
See Ink, printing, mfrs.

Panelled cards
See Paper mfrs., announcements

Paper cutters
Harris-Seybold Co.

Paper distributors, coarse
Millar, Geo. W., & Co., Inc.
Walker, Goulard, Plehn Co.

Paper distributors, cover
Alling & Cory Company, The
Bulkley, Dunton & Co.
Lindenmeyr, Henry & Sons
Majestic Paper Corp.
Millar, Geo. W. & Co., Inc.
Paper Center, The, Inc.
Royal Paper Corp.
Schlosser Paper Corp.
Walker, Goulard, Plehn Co.

Paper distributors, fine printing papers
Alling & Cory Company, The
Berman Paper Corporation
Bulkley, Dunton & Co.
Cantine, Martin Co., Inc., The
Green & Low Paper Co., Inc.
Hobson Miller Paper Co., Inc.
Lathrop Paper Co., Inc.
Linde, J. E. Co., Inc.
Lindenmeyr, Henry & Sons
Majestic Paper Corp.
Millar, Geo. W. & Co., Inc.
Milton Paper Co., Inc.
Paper Center, The, Inc.
Paper Sales Corporation
Reinhold-Gould, Inc.
Royal Paper Corp.
Schlosser Paper Corp.
Stevens-Nelson Paper Corp., The
Uptown Paper & Envel. Corp.
Walker, Goulard, Plehn Co.

Paper distributors, fine and coarse
Lindenmeyr, Henry & Sons
Majestic Paper Corp.
Millar, Geo. W. & Co., Inc.
Royal Paper Corp.

Paper distributors, sign
Lindenmeyr, Henry & Sons
Majestic Paper Corp.
Royal Paper Corp.

Paper distributors, specialty
Alling & Cory Company, The
Bulkley, Dunton & Co.
Lindenmeyr, Henry & Sons
Majestic Paper Corp.
Millar, Geo. W. and Co., Inc.
Paper Center, The, Inc.
Paper Sales Corporation
Reinhold-Gould, Inc.
Royal Paper Corp.
Walker, Goulard, Plehn Co.

Paper, export
Bulkley, Dunton & Co.
Marquardt & Co., Inc.
Walker, Goulard, Plehn Co.

Paper manufacturers
Cantine, Martin Co., Inc., The
Champion Paper and Fibre Co.
Crocker, Burbank Paper Inc.
Eastern Corporation
Ecusta Paper Corporation
Falulah Paper Co.
Glatfelter, P. H. Co.
Hammermill Paper Co.
International Paper Co.
Mead Sales Co., The
Munising Paper Co., The
Northwest Paper Co., The
Oxford Paper Co.
Riegel Paper Corporation
Strathmore Paper Company
Warren Co., S. D.

Paper manufacturers, announcements
See Papers, mfrs., announcements

Papers, printing, distributors
See Paper Distributors, fine printing papers and other paper classifications

Paper merchants
See paper distributors, fine printing papers

Papers, coated
See paper mfrs., glossy and dullcoated

Papers, imported
Alling & Cory Company, The
Stevens-Nelson Paper Corp., The

Papers, mfrs., announcements
Alling & Cory Company, The
Mead Sales Co., The
Royal Paper Corp.
Schlosser Paper Corp.
Strathmore Paper Company
Uptown Paper & Envel. Corp.

Papers, mfrs., antique
See Papers, mfrs., English finish, super and antique
Champion Paper and Fibre Co.
Crocker, Burbank Papers Inc.
International Paper Co.
Mead Sales Co., The
Northwest Paper Co., The
Oxford Paper Co.
Riegel Paper Corporation
Strathmore Paper Company
Warren Co., S. D.

Papers, mfrs., artist
Strathmore Paper Company

Papers, mfrs., bond
Crocker, McElwain Co.
Champion Paper and Fibre Co.
Eastern Corporation
Hammermill Paper Co.
International Paper Co.
Mead Sales Co., The
Munising Paper Co., The
Northwest Paper Co., The
Strathmore Paper Company

Papers, mfrs., bond and ledger
See paper manufacturers
Champion Paper and Fibre Co.
Eastern Corporation
Hammermill Paper Co.
International Paper Co.
Mead Sales Co., The
Munising Paper Co., The
Northwest Paper Co., The
Parsons Paper Co.
Valley Paper Co.

Papers, mfrs., book
See Paper manufacturers
Strathmore Paper Company

Paper, mfrs., bristols
Beveridge Paper Company, The
Hammermill Paper Co.
Riegel Paper Corporation
Strathmore Paper Company

Papers, mfrs., cardboard and coated cardboard
See Paper mfrs., Papers, mfrs., glossy and dullcoated
Beveridge Paper Company, The
Bulkley, Dunton & Co.
Cantine, Martin Co., Inc., The
Champion Paper and Fibre Co.
Crocker, Burbank Papers Inc.
Falulah Paper Co.
Holyoke Card and Paper Co.
International Paper Co.
Mead Sales Co., The
Riegel Paper Corporation

Paper mfrs., coated
See Papers, mfrs., glossy and dull coated

Papers, mfrs., coated offset
See Papers, mfrs., offset, and other classifications

Papers, mfrs., cover
Champion Paper and Fibre Co.
Eastern Corporation
Hammermill Paper Co.
Holyoke Card and Paper Co.
Mead Sales Co., The
Oxford Paper Co.
Riegel Paper Corporation
Strathmore Paper Company
Warren Co., S. D.

Papers, mfrs., drawing
Northwest Paper Co., The
Riegel Paper Corporation

Papers, mfrs., english finish, super and antique
Champion Paper and Fibre Co.
Crocker, Burbank Papers Inc.
International Paper Co.
Mead Sales Co., The
Northwest Paper Co., The
Oxford Paper Co.
Warren Co., S. D.

Papers, mfrs., envelope
Champion Paper and Fibre Co.
Hammermill Paper Co.
International Paper Co.
Mead Sales Co., The
Northwest Paper Co., The
Riegel Paper Corporation
Warren Co., S. D.

Papers, mfrs., glassine
Riegel Paper Corporation

Papers, mfrs., glossy and dullcoated
Cantine, Martin Co., Inc., The
Champion Paper and Fibre Co.
Crocker, Burbank Papers Inc.
Holyoke Card and Paper Co.
Mead Sales Co., The
Northwest Paper Co., The
Oxford Paper Co.
Warren Co., S. D.

Papers, mfrs., makeready tissue
Ecusta Paper Corporation,
Warren Co., S. D.

Papers, mfrs., offset
Cantine, Martin Co., Inc., The
Champion Paper and Fibre Co.
Crocker, Burbank Papers Inc.

For addresses and phone numbers, see pages 574 to 580

Eastern Corporation
Ecusta Paper Corporation
Hammermill Paper Co.
International Paper Co.
Mead Sales Co., The
Northwest Paper Co., The
Oxford Paper Co.
Strathmore Paper Company
Warren Co., S. D.

Papers, mfrs., packaging

Bulkley, Dunton & Co.
Champion Paper and Fibre Co.
Crocker, Burbank Papers Inc.
Mead Sales Co., The
Northwest Paper Co., The
Riegel Paper Corporation
Warren Co., S. D.

Papers, mfrs., postcards, bristols, tags

Champion Paper and Fibre Co.
Hammermill Paper Co.
International Paper Co.
Mead Sales Co., The
Northwest Paper Co., The
Riegel Paper Corporation
Warren Co., S. D.

Papers, mfrs., pressboards

Champion Paper and Fibre Co.
Riegel Paper Corporation

Papers, mfrs., silver wrapping tissue

Ecusta Paper Corporation

Papers, mfrs., specialties

Champion Paper and Fibre Co.
Crocker, Burbank Papers Inc.
Grant Photo Products, Inc.
International Paper Co.
Mead Sales Co., The
Riegel Paper Corporation
Strathmore Paper Company
Uptown Paper & Envel. Corp.

Papers, mfrs., sulphite bonds and mimeographs

Champion Paper and Fibre Co.
Eastern Corporation
Hammermill Paper Co.
International Paper Co.
Mead Sales Co., The
Munising Paper Co., The
Northwest Paper Co., The
Oxford Paper Co.

Papers, mfrs., text

Strathmore Paper Company

Papers, mfrs., thin, airmail

Ecusta Paper Corporation
Warren, Co., S. D.

Papers, mfrs., fine flax writing

Ecusta Paper Corporation

Papers, mfrs., tough check

Champion Paper and Fibre Co.
Holyoke Card and Paper Co.
International Paper Co.

Papers, mfrs., vellum

See paper manufacturers
Strathmore Paper Company

Papers, manufacturers, writing

Strathmore Paper Company
Warren Co., S. D.

Pebbling

Pebbling Company, The, Inc.

Peg board forms

Cosmo Printing Co.

Pencil sharpeners manufacturers

Hunt Pen Co.

Pencils, colored

Eagle Pencil Co.

Pencils, drawing

Eagle Pencil Co.

Perfect binding equipment

Charlton Company Inc., F. M.

Personalized direct mail

See Hoovenized letters; Addressing and mailing, etc.
Ahrend, D. H. Co., Inc.
Buckley-Dement Adv. Corp.
Comet-Ray Offset Corporation
De Haan, Inc.
Dickie-Raymond Inc.
Efficient Direct Mail Service
Hooven Letters, Inc.
McKenzie Service, Inc.
St. John Associates, The, Inc.

Photo cloth

Holliston Mills, Inc.

Photo-engravers

Aetna Photo-Engraving Co.
American Colortype Co.
American Photo Engraving Co.
Arrow Engraving Co., Inc.
Atlantic Photo Engraving Co.
Beck Engraving Co., The, Inc.
Chestnut St. Engraving Co.
Collier Photo Engraving Co.
Collins, Miller & Hutchings
Colorplate Engraving Co., The
Consolidated Production Service, Inc.
Empire Photo Engraving Corp.
Gatchel & Manning
Globe Engr. & Electrotyping Co.
Graphic Photo Engraving Co.
Harding Photo Engraving Co.
Horan Engraving Co., Inc.
Jahn & Ollier Engraving Co.
Keystone Photo Engr. Corp.
Knapp Engraving Co., Inc.
Lotz Photo-Engraving Co.
Magill-Weinsheimer Company
Majestic Photo Engraving Co., Inc.
Matthews Photo Engraving Co.
Mercury Photo Engravers Corp.
Phototype Engraving Co., Inc.
Pioneer-Moss, Inc.
Pontiac Engr. & Electrotype Co.
Quality Photo Engraving Co.
Rogers Engraving Co.
Royal-Jones Photo Engr. Corp.
Sterling Engraving Co.
Transograph Company
Trichromatic Engraving Co., Inc.
Walker Engraving Corporation
Wayne Colorplates Co. of Ohio
Wilbar Photo Engraving Co.
Wright Co., The

Photo-engraving metals

Rolled Plate Metal Co.

Photo illustrations

See also Photographers; Photographs, stock
Garraway Co., The
Nesmith, R. I.
Pontiac Engr. & Electrotype Co.
Russo, F. A., Inc.
Sperandio's All-Art Studio

Photo lettering

Hall, The J. C. Company

Photographers

Federal Lithograph Company
Garraway Co., The
Hagstrom Co., Inc.
Nesmith, R. I.
Phototrix Co.
Pontiac Engr. & Electrotype Co.
Russo, F. A., Inc.

Photographers, commercial

Garraway Co., The

Photographers, industrial

Garraway Co., The

Photographic murals

See also Murals
Garraway Co., The
Pontiac Engr. & Electrotype Co.
Russo, F. A., Inc.

Photographic papers

Grant Photo Products, Inc.

Photographic reproductions in quantity

Garraway Co., The
Russo, F. A., Inc.
Vitaprint Process Corp.

Photographs, stock

Nesmith, R. I.

Photo lettering

Artype, Inc.
Flexo Lettering Co.
Fototype Co.
Russo, F. A., Inc.

Photoprints

Electro Sun Co., Inc.
Hagstrom Co., Inc.
Vitaprint Process Corp.
Russo, F. A., Inc.
Wagner Photoprint Co.

Photography, three dimensional

Dimensional Arts, Inc.

Pictures

Grinnell Lithograph Co., Inc.

Plaques, bronze

United States Bronze Sign Co.

Plastic inks

See ink, printing, mfrs.

Plastic lithographing

Sweeney Lithograph Co., Inc.

Plastic mould vulcanizer

H. H. Heinrich Inc.

Plastic printing plates

See Electrotypes
Consolidated Production Svce.
Cresset Co.
Flower Electrotypes
Knickerbocker Electrotype Co.
National Electrotype Co.
Partridge and Anderson Co.
Pontiac Engr. & Electrotype Co.
Rapid Electrotype Co.
Reilly Electrotype Co.

Plastics

Ranger-Tennere, Inc.

Plastictypes

Reilly Electrotype Co.

Plate corrections

See Electrotypes
Cresset Co.

For addresses and phone numbers, see pages 574 to 580

Electrotype Correction Co., Inc.
Flower Steel Electrotype Co.
Midtown Plate Correction Corp.

Plates
Cylindrical printing, for rotary type letterpresses and gravure presses

New York Electrotyping Co.
Pontiac Engr. & Electrotype Co.
Reilly Electrotype Co.

Plates, almanac and calendar
Pontiac Engr. & Electrotype Co.

Plate making equipment, cameras, plate coating machines,
Vacuum frames, photo composing machines—step and repeat

Lanston Monotype Machine Co.

Plate pre-registering equipment,opti-chek
Heinrich, H. H., Inc.

Plates for sheet-fed gravure presses
Intaglio Service Corp.

Point of sale displays
See Lithographers, and various display classifications

Ranger-Tennere, Inc.

Protable exhibits and displays
See Displays, fronts, floats and Booths

Hayden & Co., E. J., Inc.
Mevi Company, The

Portfolios presentations
Aigner Co., G. J.
Industrial Advertising Department of Associated Electronics Co.
Brewer-Cantelmo Co., Inc.
Burkhardt Company, The
Charlton Company Inc., F. M.
Fisher Bookbinding Co., Inc.
Garraway Co., The
Hayden & Co., E. J., Inc.
McKenzie Service, Inc.
Mevi Company, The
Pantone Press, Inc.
Remington Rand Inc.
Sales Presentations
Smith Co., The S. K.
Tri-Arts Press, Inc.
Vita-Specialties Co.

Postage meter machines
See mailing machines

Pitney-Bowes, Inc.

Poster stamp merchandising
Jaffe, Herman

Posters
See Lithographers, posters; Silk screen process and display

Comet-Ray Offset Corporation
Forbes Lithograph Mfg. Co.
Hayden & Co., E. J., Inc.
Hopp Press, The, Inc.
Masta Displays, Inc.
Strobridge Lithographing Co.,
Sweeney Lithograph Co., Inc.
Tooker Lithograph Co., Inc.
U.S. Printing & Lithograph Co.
Vitaprint Process Corp.

Posters, outdoor 24 sheets
U.S. Printing & Lithograph Co.

Premiums
Mevi Company, The
Jaffe, Herman

Presses, automatic rollfeed multigraph printing
Champlain Corp.

Presses for cartons
New Era Manufacturing Co.
Sperry Corp., The, E. G. Staud Division

Presses for checks
New Era Manufacturing Co.

Presses for match book covers, tickets
New Era Manufacturing Co.

Press manufacturers
American Type Founders
Champlain Company, Inc.
Electric Boat Co., Printing Machinery Div.
Harris-Seybold Co.
Heinrich, Inc., H. H.
Miehle Printing Press & Mfg. Company
New Era Manufacturing Co.
The Sperry Corp., E. G. Stand Division

Presses, offset lithographic
Electric Boat Co., Printing Machinery Division
Harris-Seybold Co.
Miehle Printing Press & Mfg. Company
Sperry Corp., The, E. G. Staud Division

Presses, rotary printing
Letterpress and gravure

American Type Founders
Champlain Company, Inc.
Crowell-Collier Publishing Co., The
Heinrich Inc., H. H.
Miehle Prtg. Press & Mfg. Co.
New Era Manufacturing Co.
Sperry Corp., The, E. G. Staud Division

Presses for unit sets
New Era Manufacturing Co.

Pressroom equipment
American Type Founders
Champlain Company, Inc.
General Printing Ink Division Sun Chemical Corporation
Graphic Arts Products
Coxhead Corporation, Ralph C.

Presswork, trade
Pantone Press, Inc.

Printers
Advertising Agencies Service
Aldus Printers, Inc.
American Book-Stratford Press, Inc.
American Colortype Co.
Ampco Printing Co.
Arlington Press, Inc.
Art Color Printing Company
Bingham Company, The
Blanchard Press
Bosch, George and Co., Inc.
Bragaw-Hill, Inc.
Brooklyn Eagle Press, Inc.
Brooks Co., The
Buckley-Dement Adv. Corp.
Chrysler Printing Co., Inc.
Colyer Printing Company
Comet Press, Inc.
Comet-Ray Offset Corporation
Conkey Co., W. B.
Cosmos Printing Co.
Davis, Delaney, Inc.
Dillon Co., J. C., Inc.
Eilert Printing Co.
Empire State Craftsmen, Inc.
Evans-Winter-Hebb, Inc.
Fell Co., Wm. F.
Fidelity Press
Francis, Charles, Press, Inc.
Georgian Press, Inc.
Gray, James, Inc.
Gray Printing Co.
Griffin Miller Bates Co., Inc.
Handcraft Press
Higgins-McArthur Co.
Hygrade Printing & Stationery Co.
I-X-L Printing Co.
Jaffe, Arthur, Inc.
Jaffe, Herman
Kable Brothers Company
Lasky Co., Inc.
Laurel Process Co., Inc.
Lenz & Riecker, Inc.
Lind Brothers
Lobel Williams
Lyons Press, T. J.
McGraw-Phillips Printing Co.
Mail & Express Printing Co., Inc.
Mallon, Peter F., Inc.
Middleditch Company, L.
Moore Business Forms, Inc.
Norman Press, The
Orthwine, Rudolph, Corp.
Pantone Press, Inc.
Photogravure & Color Co.
Playbill, Inc.
Plymouth Printing Co., Inc.
Rand Avery-Gordon Taylor, Inc.
Rogers-Kellogg-Stillson, Inc.
Rumford Press, The
Salley & Collins
Schmidt, Frederick W., Inc.
Smith and Welsh
Stuyvesant Press Corporation
Tavern Printing Corp., The
Tooker Lithograph Co., Inc.
Tri-Arts Press, Inc.
Triggs Color Printing Corp.
U.S. Printing & Lithograph Co.
Upton Printing Co., E. S.
Vanderbilt-Jackson Typography, Inc.
Watts Co., Alfred Allen, Inc.
Williams Press, Inc.

Printers, bookkeeping machine forms
Mercury Printing Co.
Watts Co., Afred Allen, Inc.

Printers' business forms
Watts Co., Alfred Allen, Inc.

Printers, catalog and color
Ahrend Co., D. H., Inc.
Alco-Gravure, Div. of Publication Corporation
American Book-Stratford Press, Inc.
American Colortype Co.
Ampco Printing Co.
Arrow Press, Inc.
Barr-Erhardt Press, Inc.
Beck Engraving Co., The, Inc.
Bingham Company, The
Blanchard Press
Colyer Printing Company
Comet Press, Inc.
Conkey Co., W. B.
Davis, Delaney, Inc.
De La Mare Co., A. T., Inc.
Dillon Co., J. C., Inc.
Eilert Printing Co.
Francis, Charles, Press, Inc.
Hall, The J. C. Company
Kable Brothers Company
Lenz & Riecker, Inc.
Lind Brothers
Lobel Williams
Marbridge Printing Co., Inc.
Middleditch, L. Company
Pantone Press, Inc.
Parkway Printing Co., Inc.
Read Printing Co., The, Inc.

For addresses and phone numbers, see pages 574 to 580

Rogers-Kellogg-Stillson, Inc.
Salley & Collins
Schneider Press, Inc.
Stuyvesant Press Corporation
Tavern Printing Corp., The
Triggs Color Printing Corp.
Watts, Alfred Allen Co., Inc.
Williams Press, Inc.
Wisconsin Cuneo Press, Inc.

Printers, catalog and directory
See printers, catalog and color

Printers, cellophane
Forbes Lithograph Mfg. Co.
United Envelope Co.

Printers, celluloid, cloth, glass, metal, wood
Austin, The O. Co.
Hayden, E. J. & Co., Inc.
Hopp Press, The, Inc.
Salley & Collins

Printers, cellulose acetate
See printers, celluloid, cloth, glass, metal, wood

Printers, color
See printers, catalog and color

Printers, decalcomanias
Decalcomania Specialties Co.
Palm Bros. Decalcomania Co.

Printers, direct mail
See other classifications of printers
Advertising Agencies Service
Ahrend, D. H. Co., Inc.
Alco-Gravure, Div. of Publication Corporation
American Colortype Co.
Ampco Printing Co.
Bingham Company, The
Blanchard Press
Bosch, George & Co., Inc.
Buckley-Dement Adv. Corp.
Colyer Printing Company
Comet Press, Inc.
Comet-Ray Offset Corp.
Correct Printing Co.
Davis, Delaney, Inc.
De La Mare Co., A. T., Inc.
J. C. Dillon Co., Inc.
Efficient Direct Mail Service
Eilert Printing Co.
Empire State Craftsmen, Inc.
Fisher Printing Co.
Francis, Charles, Press, Inc.
Githens-Sohl Corporation
Handcraft Press
Jaffe, Herman
Lenz & Riecker, Inc.
Lind Brothers
Lobel Williams
Lyons Press, T. J.
Magill-Weinsheimer Company
Pantone Press, Inc.
Read Printing Co., The, Inc.
Reliable Press, Inc.
Salley & Collins
Schmidt, Frederick W., Inc.
Tavern Printing Corp., The
Tri-Arts Press, Inc.
Upton Printing Co., E. S.

Printers, duplicator machine forms
Mercury Printing Co.
Watts, Alfred Allen Co., Inc.

Printers, financial
See other printer heads
Ampco Printing Co.
Blanchard Press
Comet Press, Inc.
Hall, The J. C. Company
Lenz & Riecker, Inc.
Lind Brothers
Middleditch, L. Co.

Printers, foreign language
Coxhead, Ralph C. Corporation
Lind Brothers
Maher, John Printing Co.

Printers, gravure sheetfed
Beck Engraving Co., The, Inc.
Cameo Die & Label Co.
Dillon, J. C., Co., Inc.
Grinnell Lithograph Co., Inc.
Photogravure and color

Printers, house magazines
Blanchard Press

Printers—interleaved carbon forms
Mercury Printing Co.
Watts, Alfred Allen Co., Inc.

Printers, label
Cameo Die & Label Co.
Colyer Printing Company
Ever Ready Label Corporation
Lind Brothers
U. S. Printing & Lithograph Co.

Printers, loose leaf forms
Hygrade Printing & Stationery Co.
Watts, Alfred Allen Co., Inc.

Printers, pegboard and summary forms
Mercury Printing Co.
Watts, Alfred Allen Co., Inc.

Printers, periodical and publication
See also printers, etc.
Alco-Gravure, Div. of Publication Corporation
American Colortype Co.
Barnes Printing Co., The, Inc.
Blanchard Press
Brooklyn Eagle Press, Inc.
Colyer Printing Company
Comet Press, Inc.
Davis, Delaney, Inc.
De La Mare Co., A. T., Inc.
Dillon Co., J. C., Inc.
Eilert Printing Co.
Francis, Charles, Press, Inc.
Inland Press, The, Inc.
Kable Brothers Company
Lind Brothers
Lobel Williams
Middleditch, L. Company
Salley & Collins
Stuyvesant Press Corporation
Williams Press, Inc.
Wisconsin Cuneo Press, Inc.

Printers, photogelatin
Consolidated Film Industries
Fredrick Photogelatine Press
Jaffe, Arthur, Inc.
New York Gravure Co.

Printers, photogravure
Photogravure and Color Co.

Printers, photogravure hand printed
Photogravure and Color Co.

Printers, rotogravure
Alco-Gravure, Div. of Pub. Corp.
Allen & Kenton, Inc.
Intaglio Service Corp.
Kable Brothers Company

Printers' supplies
American Type Founders
April Typesetting Company
Artype Inc.
Coxhead, Ralph C. Corp.
Graphic Arts Products
Judson Type, Inc.
Sinclair and Valentine Co.
Taylor Made Rule Co.

Printers, trade
Faultless Press
Pantone Press

Printing equipment manufacturers, for letterpress, lithography
Lanston Monotype Machine Co.

Printing inks & supplies
See ink, printing, mfrs.

Printing, three dimensional
Dimensional Arts, Inc.

Printing, transparent
Artype, Inc.
Fototype Co.
Hayden, E. J. & Co., Inc.
United States Envelope Co.

Production service
Consolidated Production Service, Inc.
Coxhead Corporation, Ralph C.
Industrial Advertising Dept. of Associated Electronics Co.
Rapid Electrotype Co., The

Proof presses
Vandercook & Sons, Inc.

Proofreading
General Composition Company
Machine Composition Co.

Pyroxylin coated cloths
Holliston Mills, Inc.

Record albums
Charlton Company, F. M., Inc.

Reproduction process consultants
Austin Co., The O.
Coxhead Corporation, Ralph C.
Rapid Electrotype Co., The

Repro proofs
See Typographers, Hand Typographers, Machine

Retouching
Aetna Photo-Engraving Co.
Arrow Engraving Co., Inc.
Industrial Advertising Department of Associated Electronics Co.
Chestnut St. Engraving Co.
Garraway Co., The
Graphic Photo Engraving Co.
Hagstrom Co., Inc.
Nesmith, R. I.
Pioneer-Moss, Inc.
Pontiac Engr. & Electrotype Co.
Sperandio's All-Art Studio
Sterling Engraving Co.

Roll leaf
Holliston Mills, Inc.

Roll leaf stamping presses
Altair Machinery Corporation

For addresses and phone numbers, see pages 574 to 580

Roytype ribbons and carbon papers
Royal Typewriter Company, Inc.

Rubber and plastic plate-making equipm't
Heinrich, H. H., Inc.

Rubber plate vulcanizer
Heinrich, H. H., Inc.

Rubber printing plates
Mosstype Corporation
Partridge & Anderson Co.

Rubber printing plates, molded
New York Electrotyping Co.
Pontiac Engr. & Electrotype Co.

Rubber printing plates molded, engraved
Rau, Herbert W.
Rau Rubber Engraving Co.

Rule manufacturers
See also Typefoundries
American Typefounders Sales
Judson Type, Inc.
Meyer, John C., & Son
Taylor Made Rule Co.

Ruling
Greater N. Y. Ruling Co.
Shoemaker & Co.
Uptown Paper & Envel. Corp.

Sample cards, sample swatching
Charlton Company, F. M., Inc.
McKenzie Service
Melnick Bindery
Mevi Company, The
Peerless Sample Card Co., Inc.

Scrapbooks advertising
Hodges, Mitchell Converse

Scratch boards
Industrial Advertising Dept. of Associated Electronics Co.
Brown, Arthur, & Bro., Inc.

Seals
Cameo Die & Label Co.
Ever Ready Label Corporation
McKenzie Service

Sealing
McKenzie Service, Inc.

Sealing, machine
E. J. Hayden & Co., Inc.

Shading films
Flax, Sam

Shading mediums
Ben Day, Inc.
Transograph Company

Show cards
See also Sign classifications
Bulkley, Dunton & Co.
Hayden, E. J., & Co., Inc.
Masta Displays, Inc.
Poster Craftsmen, Inc.

Sign cloth
Holliston Mills, Inc.

Signs
See also Sign classifications
Decalcomania Specialties Co.
Hayden, E. J. & Co., Inc.
Masta Displays, Inc.

Signs, bronze
United States Bronze Sign Co.

Signs, cloth
Austin Co., The O.
Hayden, E. J., & Co., Inc.
Sweeney Lithograph Co., Inc.

Signs, electric
Hayden, E. J., & Co., Inc.
Palm Bros. Decalcomania Co.

Signs, electric transparency
Hayden, E. J., & Co., Inc.

Signs, embossed
Burkhardt Company, The
Hayden, E. J., & Co., Inc.
Ranger-Tennere, Inc.
Smith, The S. K. Co.
Vitaprint Process Corp.

Signs, glass
Austin, The O. Co.
Hayden, E. J., & Co., Inc.
Palm Bros. Decalcomania Co.

Signs, metal
Austin Co., The O.
Hayden, E. J., & Co., Inc.

Signs, window
Austin, The O., Co.
Hayden, E. J. & Co., Inc.
Palm Bros. Decalcomania Co.
Tooker Lithograph Co., Inc.

Silk screen process and display
Austin Co., The O.
Bing Displays, Inc.
Decalcomania Specialties Co.
Fototype Co.
Garraway Co., The
Hayden, E. J., & Co., Inc.
Masta Displays, Inc.
Mevi Company, The
Palm Bros. Decalcomania Co.

Snap-out forms
Laurel Systems Co., Inc.

Speedball pens
Hunt Pen Co.

Steel rule dies
Freedman Die Cutters, Inc.

Stereotype dry mat manufacturers
Beveridge Paper Company, The
Wood Flong Corp.

Stereotypes
Consolidated Production Service, Inc.
Cresset Co.
Electrotype Correction Co., Inc.
Elliot Electrotype, Stereotype & Mat Company, Inc.
Gilliams & Rubin, Inc.
Midtown Plate Correction Corp.
Rapid Electrotype Company
Reilly Electrotype Co.

Stereotyping accessories and supplies
American Type Founders
Wood Flong Corporation

Stereotypes and mats
See also mats
Buntin, J. T., Inc.
Electrotype Correction Co., Inc.
Flower Steel Electrotype Co.
Knickerbocker Electrotype Co.
Midtown Plate Correction Corp.
National Electrotype Co.
Partridge & Anderson Co.
Rapid Electrotype Company
Reilly Eectrrotype Co.
Royal Electrotype Co.

Stickers
Ever Ready Label Corporation

Stringing, booklets, tags, etc.
Standard Tag Company

Strip casting machines
Lanston Monotype Machine Co.
Ludlow Typograph Company

Tag cloth
Holliston Mills, Inc.

Tags
American Tag Co.
General Tag Co.

Tags, blank and printed
Standard Tag Company

Tags and labels
Anchor Tag & Label Co.
Cameo Die & Label Co.
Columbia Lithographic Co., Inc.
Ever Ready Label Corporation
New Era Manufacturing Co.

Tags, advertising
Cameo Die & Label Co.
Columbia Lithographic Co., Inc.
New Era Manufacturing Co.

Tags, stringing, wiring, eyeletting, patching
Standard Tag Company

Thermographers
Marshall Press, Inc.

Thermographers, business cards
Hill, R. O. H., Inc.

Thermographers, trade
Ahrendt, Inc.

Three dimensional printing
Dimensional Arts Inc.

Trade marks, design
See also Designers, Industrial Advertising
Department of Associated Electronics Co.
Palm Bros. Decalcomania Co.

Translation, foreign language
Industrial Advertising Department of Associated Electronics Co.

Truck lettering and designs, decalcomania
Decalcomania Specialties Co.
Palm Bros. Decalcomania Co.,

Turntables, display
Hayden, E. J., & Co., Inc.

Type-casting and typesetting machines
Coxhead Corporation, Ralph C.
Intertype Corporation
Lanston Monotype Machine Co.
Ludlow Typograph Company
Mergenthaler Linotype Co.

Type Founders and composing room equip.
Acme Detroit Type Founders

For addresses and phone numbers, see pages 574 to 580

American Type Founders
Baxter & Spencer
Coxhead Corporation, Ralph C.
Graphic Arts Products
Judson Type, Inc.
Meyer, John C., & Son

Type matrices

Intertype Corporation
Ludlow Typograph Company
Mergenthaler Linotype Co.

Typewriters

Coxhead Corporation, Ralph C.
International Business Machines Corporation
Remington Rand, Inc.
Royal Typewriter Company, Inc.
Underwood Corporation

Typewriters, justifying devices

Coxhead Corporation, Ralph C.
International Business Machines Corporation
Remington Rand Inc.

Typewriting, automatic

See also Hoovenized letters

Ahrend Co., D. H., Inc.
Buckley-Dement Adv. Corp.
Hooven Letters, Inc.

Typing, Typewriting for offset

Comet-Ray Offset Corporation
Coxhead Corporation, Ralph C.
Fototype Co.
International Business Machines Corporation
Machine Composition Co.

Typographic counsel and designer

See also Designers, Typographers, hand and machine

Jones, E. Willis

Typographers, hand

Advertising Agencies Service
Advertising Composition, Inc.
Allied Typographers, Inc.
Associated Typographers, Inc.
Armstrong, Walter T., Inc.
Baumwell, M. J., Typography
Berkeley Press, The
Baxter & Spencer, Inc.
Boro Typographers, Inc.
Bullard, Howard O., Inc.
Bundscho, J. M., Inc.
Cincinnati Typesetting Co.
Commanday Bros., Inc.
Composing Room, The, Inc.
Composition Service, Inc.
Consolidated Production Service, Inc.
Cooper & Cohen, Inc.
Crescent Linotyping Corp.
Crowell, F. A., Inc.
Detroit Typesetting Company
Diamant Typographic Service
Downtown Typesetter, The, Inc.
Edwards Typography, A. T., Inc.
Empire State Craftsmen, Inc.
Ford Co., J. W.
Ganer Linotype Craftsmen
General Composition Company
Graphic Arts Typographers, Inc.
Hayes, Lochner, Inc.
Higgins-McArthur Co.
Highton, Alex G., Inc.
Hochstadt Co., F., Inc.
Jordan, Alfred J., Inc.
Leventhal, Oscar, Inc.
Lyons Press, T. J.
McGraw-Phillips Printing Co.
McKeever & Morris, Inc.
Machine Composition Co.
Master Typographers, Inc
Meyer & Son, John C.
Monsen-Chicago, Inc.
National Typographic Service
Phillips, Frederic Nelson, Inc.
Philmac Typographers
Pontiac Engr. & Electrotype Co.
Progressive Typography
Real Typographers, Inc.
Royal Electrotype Co.
Ruttle, Shaw & Wetherill, Inc.
Salley & Collins
Schmidt, Frederick W., Inc.
Supreme Ad Service
Terry's Linotyping Co.
Tri-Arts Press, Inc.
Tudor Typographers
Type House, The, Inc.
Typesetting Service Co.
Typographic Vogue
Typographic Service, Inc.
Vanderbilt-Jackson Typography, Inc.
Volk, Kurt H., Inc.
Wrightson, Cecil H., Inc.

Typographers, machine

Abend Typograph Co., Inc.
Advertising Agencies Service
Allied Typographers, Inc.
American Typesetting Corp.
April Typesetting Co.
Armstrong, Walter T., Inc.
Associated Typographers, Inc.
Atlantic Linotype Co.
Baltimore Type & Comp. Corp.
Baumwell, M. J., Typography
Baxter & Spencer, Inc.
Boro Typographers, Inc.
Brown Brothers Linotypers
Bullard, Howard O., Inc.
Bundscho, J. M., Inc.
Central Linotypers, Inc.
Cincinnati Typesetting Co.
Cobb Typesetting Co.
Commanday Bros., Inc.
Composing Room, The, Inc.
Composition Service, Inc.
Consolidated Production Service, Inc.
Cooper & Cohen, Inc.
Coxhead Corporation, Ralph C.
Crescent Linotyping Corp.
Cromwell Co., The
Crowell, F. A., Inc.
Dayton's Typographic Service
Detroit Typesetting Company
Diamant Typographic Service
Downtown Typesetter, The, Inc.
Edwards Typography, A. T.
Empire State Craftsmen, Inc.
Ford Co., J. W.
Ganer Linotype Craftsmen
General Composition Company
Graphic Arts Typographers, Inc.
Haber Linotyping Co., Inc.
Hayes, Lochner, Inc.
Higgins-McArthur Co.
Highton, Alex G., Inc.
Hochstadt Co., F., Inc.
Hurst Linotypers, Inc.
Jennings, Albert O., Inc.
Jordan, Alfred J., Inc.
Judson Type, Inc.
King Typographic Service
Kline Linotyping Co., Inc.
Koppelman Co., Inc.
Lafayette Linotyping Co.
Leventhal, Oscar, Inc.
M & L Typesetting & Electrotyping Co.
McGraw-Phillips Printing Co.
Machine Composition Co.
Master Typographers, Inc.
Meyer & Son, John C.
Monsen-Chicago, Inc.
National Typographic Service
O'Brien, Chas. D., Inc.
Patrick, William, Inc.
Phillips, Frederic Nelson, Inc.
Philmac Typographers
Popp & Son, Emil P.
Real Typographers, Inc.
Rochester Monotype Composition Company, Inc.
Ruttle, Shaw & Wetherill, Inc.
Sahlin, Axel E., Typog. Service
Salley & Collins
Schirmer, Arthur B., Inc.
Schmidt, Frederick W., Inc.
Standard Linotypers, The
Starkey & Co.
Stoyer Printing Co.
Terry's Linotyping Co.
Tri-Arts Press, Inc.
Tudor Typographers
Type House, The, Inc.
Typesetting Service Co.
Typographic Service Co.
Typographic Service, Inc.
Typographic Vogue
Vanderbilt-Jackson Typography, Inc.
Volk, Kurt H., Inc.
Wrightson, Cecil H., Inc.

Typography, old-fashioned

Lyons Press, T. J.
Phillips, Frederic Nelson, Inc.

Typographers, transparent and self-adhesive proofs

Monsen-Chicago, Inc.

Vaporin inks

International Printing Ink

Vaposet inks

International Printing Ink

Vari-typer composition

Academy Photo Offset, Inc.
Ahrend Co., D. H., Inc.
Coxhead Corporation, Ralph C.
Electro Sun Co., Inc.
Fototype Co.

Varnishing

Carlson Co., Frank P., Inc.
Lithographers' Finishing Co.
Lutz & Sheinkman
Standard Bindery

Vita prints

Vitaprint Process Corp.

Waterproof photographic paper

Grant Photo Products, Inc.

Wax engraving

See Electrotypes

Flower Steel Electrotype Co.
National Electrotype Co.
Reilly Electrotype Co.
Royal Electrotype Co.

Wrappers

U. S. Printing & Lithograph Co.

For addresses and phone numbers, see pages 574 to 580

Key list for buyers' guide

Firm names, addresses and telephone numbers of leading concerns represented in this volume either with advertisements, special inserts, or listings in buyers' guide section

A

Abend Typograph Co., Inc., 237 Lafayette Street, New York 12, N. Y. Walker 5-3587

Academy Photo Offset, Inc., 15 E. 22nd Street, New York 10, N.Y. GRamercy 5-7009

Ace Electrotype Co., The, 1501 Superior Ave., Cleveland 14, Ohio. CHerry 4420

Acme Detroit Type Founders, 1959 East Jefferson Avenue, Detroit 7, Michigan. Fitzroy 5970

Adams, F. G. Company, 216 William Street, New York 7, N. Y. BEekman 3-1846

Advertisers' Mailing Service, Inc., 915 Broadway, New York, N. Y. ALgonquin 4-6665

Advertising Agencies' Service Co., Inc., 216 E. 45th Street, New York, N. Y. VAnderbilt 6-0590

Advertising Composition, Inc., 305 E. 46th St., New York, N. Y. WIckersham 2-9021

Aetna Photo-Engraving Co., Inc., 305-11 East 47th Street, New York 17, N. Y. ELdorado 5-7740

Ahrend, D. H. Co., Inc., 333 East 44th Street, New York, N. Y. MUrray Hill 4-3411

Ahrendt, Inc., 333 6th Avenue, New York 14, N. Y. Phone: CHelsea 3-2258-9

Aigner, G. J. Co., 503 South Jefferson, Chicago, Illinois. Harrison 7414

Air Express Division, Railway Express Agency, 219 East 42nd Street, New York, N. Y. MUrray Hill 6-7900

Alco-Gravure, Div. of Publication Corp., Plant 9th & Monroe Sts., Hoboken, N. J. HOboken 3-3800. N. Y. Phone: COrtland 7-3181

Aldus Printers, Inc., 461 Eighth Ave., New York. MEdallion 3-2065

Allied Loose-Leaf Corp., 47 Great Jones St., New York, N. Y. GRamercy 7-6934

Allen & Kenton, Inc., 16 West 61st Street, New York, N. Y. CIrcle 5-8430

Allied Typographers, Inc., 636 11th Avenue, New York, N. Y. CIrcle 6-6940

Alling & Cory Company, The, 133-141 W. 21st Street, New York, N. Y. CHelsea 3-6030

Altair Machinery Corporation, 55 Van Dam Street, New York 13, N. Y. WAlker 5-8870

American Artists Group, Inc., 106 7th Avenue, New York. CHelsea 3-8942

American Automatic Typewriter Co., 614 N. Carpenter St., Chicago 22, Illinois. Hay 0333

American Book-Stratford Press, Inc., 75 Varick Street, New York, N. Y. WAlker 5-7600

American Colortype Co., 200 Fifth Avenue, New York 10, N. Y. GRamercy 3-2000. 1151 Roscoe St., Chicago 13, Ill. Buckingham 1111. Coshocton, Ohio. Coshocton 153.

American Electrotype Co., The, 2182 E. Ninth Street, Cleveland 15, Ohio. CHerry 1302

American Envelope Mfg. Co., 22 Howard Street, New York 13, N. Y. CAnal 6-7152

American Photo Engraving Co., 1304 Race Street, Philadelphia 7, Pa. LOcust 7-8129

American Tag Co., 516 Commercial Trust Building, Philadelphia 2, Pa. Rittenhouse 5559

American Type Founders Sales Corp., 108 E. 25th Street, New York, N. Y. GRamercy 5-7160

American Typesetting Corp., 547 South Clark St., Chicago, Illinois. Harrison 9855

Ampco Printing Co., 313 W. 37th Street, New York, N. Y. WAlker 5-8177

Anchor Tag & Label Co., 516 West 34th St., New York, N. Y. MEdallion 3-5900

Ansla Company, The, 103 East 125th Street, New York 35, N. Y. LEhigh 4-3370

Apfel, Harold, Fashion Art Studio, 114 E. 32nd St., New York, N. Y. MUrray Hill 3-0570-1

April Typesetting Company, 270 Lafayette Street, New York 12, N. Y. CAnal 6-6580

Ardlee Service, Inc., 28 West 23rd Street, New York 10, N. Y. GRamercy 3-4060

Arlington Press, Inc., 393-399 Lafayette Street, New York 3, N. Y. GRamercy 5-4800

Armstrong, Walter T., Inc., 35 N. 10th Street, Philadelphia, Pa. Walnut 2-2176

Arrow Engraving Co., Inc., 240 West 40th Street, New York 18, N. Y. WIsconsin 7-9677

Arrow Press, Inc., 636 Eleventh Ave., New York, CIrcle 6-6890

Art Color Printing Co., 420 Lexington Ave., New York, N. Y. MOhawk 4-8600

Art Electrotype Co., The, 1104 Prospect Avenue, Cleveland 15, Ohio. CHerry 6834

Artkraft Sign Co., Div. of Artkraft Mfg. Corp., Lima, Ohio. 4-7481

Artype, Inc., 30 East Illinois Street, Chicago, Illinois. Whitehall 2253

Associated Electronics Co., Industrial Advertising Department of, 132 Nassau Street, New York 7, N. Y. BEekman 3-3912

Associated Typographers, Inc., 227 East 45th Street, New York, N. Y. MUrray Hill 2-1043

Atlantic Linotype Company, 65 Flatbush Avenue, Brooklyn, New York. NEvins 8-0540

Atlantic Photo Engraving Co., 227 E. 45th Street, New York, N. Y. MUrray Hill 2-4554

Austin, O. Co., The, 335 Throop Avenue, Brooklyn 21, N. Y. STerling 3-3858

B

Baltimore Type, 15-17 So. Frederick St., Baltimore 2, Md. Plaza 6277

Barnes Printing Co., Inc., The, 229 West 28th St., New York, N. Y. PEnnsylvania 6-4738

Barr-Erhardt Press, Inc., 205 West 19th St., New York, N. Y. WAtkins 9-6670-1-2

Baumwell, M. J., Typography, 312 East 23rd Street, New York, N. Y. GRamercy 3-1354

Baxter & Spencer, Inc., 110 Greenwich Street, New York, N. Y. WHitehall 4-4636

Beck Engraving Co., Inc., 105 S. 7th, Philadelphia 6, Pa. Walnut 2-4856. 305 E. 45th St., New York 17, N. Y. MUrray Hill 4-4694. 406 Statler Office Bldg., Boston 16, Mass. Hubbard 8355

Ben Day, Inc., 118 E. 28th Street, New York, N. Y. MUrray Hill 3-9257

Benart Mail Sales Service, Inc., 235-247 East 45th St., New York, N. Y. MOhawk 4-0981

Berkeley Press, The, 72 Lincoln St. Boston, Mass. Liberty 2-7591

Berman Paper Corporation, 207 E. 119th Street, New York, N. Y. SAcramento 2-1500

Bettman Archive, The, 211A East 57th St., New York 22, N. Y. PLaza 8-0362 & PLaza 8-2811

Beveridge-Paper Company, The, 717 W. Washington, Indianapolis, Ind. Riley 4391

Bing Displays, Inc., 3643 Beaubien, Detroit 1, Mich. Temple 30860

Bingham Company, The, 1315-29 Cherry Street, Philadelphia 7, Pa. LOcust 7-1205-6

Blanchard Press, Inc., 418 W. 25th Street, New York, N. Y. WAtkins 4-5700

Bosch, George & Co., Inc., 305 E. 46th Street, New York 17, N. Y. PLaza 3-0030

Boro Typographers, Inc., 115 East 23rd Street, New York 10, N. Y. GRamercy 3-1282-3

Bowne & Turner, 22 Warren Street, New York, N. Y. BArclay 7-5048-9

Bragaw-Hill, Inc., 19 W. 21st Street, New York, N. Y. GRamercy 5-2690

Brett Lithographing Co., 47-07 Pearson Place, Long Island City, N. Y. IRonsides 6-9020

Brewer-Cantelmo Co., Inc., 116 E. 27th Street, New York, N. Y. MUrray Hill 5-1200

Brooklyn Eagle Press, Inc., 24 Johnson Street, Brooklyn, N. Y. MAin 4-2100

Brooks Co., The, 141 N. 11th Street, Philadelphia, Pa. Rittenhouse 2225-6

Brown, Arthur & Bro., Inc., 67 West 44th Street, New York 18, N. Y. MUrray Hill 2-5050

Brown Brothers Linotypers, 424 West 33rd Street, New York 1, N. Y. PEnnsylvania 6-9626-7

Buckley-Dement Advertising Corp., 707 Jackson Boulevard, Chicago, Illinois. Franklin 1710

Bulkley, Dunton & Co., 295 Madison Avenue, New York, N. Y. CAledonia 5-5260

Bullard, Howard O., Inc., 150 Varick Street, New York, N. Y. WAlker 5-2500

Bundscho, J. M., Inc., 65 E. South Water Street, Chicago, Ill. Randolph 7292

Buntin, J. T., Inc., 228 E. 45th St., New York, N. Y. MUrray Hill 2-2434

Burkhardt Company, The, Burkhardt Building, Larned and Second Sts., Detroit, Michigan. Cadillac 1400

C

Cameo Die & Label Co., 154 W. 14th Street, New York, N. Y. WAtkins 9-8484

Cantine Co., Inc., Martin, The Saugerties, N. Y. Tel 48. 41 Park Row, New York 7, N. Y. BArclay 7-3662

Carlson, Frank P., Co., Inc., 304 E. 23rd Street, New York, N. Y. GRamercy 3-6296

Central Electrotype Co., The, 1760 East 22nd St., Cleveland 14, Ohio. PRospect 2110

Central Linotypers, Inc., 16 W. 22nd Street, New York, N. Y. GRamercy 5-1518

Champion Paper and Fibre Co., Hamilton, Ohio. Phone: 2020. 230 Park Ave., New York, N. Y. MURray Hill 6-1080. Branches in all major cities

Champlain Company, Inc., 88 Llewellyn Ave., Bloomfield, N. J. Bloomfield 2-7350

Charlton, F. M. Company, Inc., 345 Hudson Street, New York, N. Y. WAtkins 4-3050

Chestnut St. Engraving Co., 11th and Chestnut Sts., Philadelphia, Pa. Pennypacker 7878

Chrysler Printing Co., Inc., 238 E. 44th St., New York, N. Y. MUrray Hill 2-3455

Cincinnati Typesetting So., 436 Coml. Square, Cincinnati, Ohio. Cherry 2235

Cobb Typesetting Co., Textile Bldg., Cincinnati, Ohio. Cherry 1146-1147

Collier Photo-Engraving Co., Inc., 270 Lafayette Street, New York 12, N. Y. CAnal 6-3320

Collins, Miller & Hutchings, 207 North Michigan Avenue, Chicago 1, Illinois. Franklin 5854

Colorplate Engraving Co., The, 311-319 West 43rd Street, New York 18, N. Y. CIrcle 6-6762

Columbia Lithographic Co., Inc., 225 Varick Street, New York 14, N. Y. WAtkins 4-1560

Colyer Printing Company, Cor. Sussex Ave. and Dey St., Newark, New Jersey, HUmboldt 3-4150

Comet Press, Inc., 200 Varick Street, New York 14, N. Y. WAtkins 4-6080

Comet-Ray Letter Service, Inc., 110 West 32nd Street, New York 1, N. Y. LOngacre 4-8760

Comet-Ray Offset Corporation, 110 West 32nd Street, New York, N. Y. ALgonquin 4-9421

Commanday Bros., Inc., 175 Varick St., New York, N. Y. WAtkins 4-0288

Commercial Bindery, Inc., The, 854 Howard Street, Detroit 26, Michigan. Cadillac 4105

Composing Room, Inc., The, 130 W. 46th Street, New York 19, N. Y. MEdallion 3-2380

Composition Service, Inc., 229 W. 28th Street, New York 1, N. Y. PEnnsylvania 6-1864

Conkey, W. B. Co., 601 Conkey St., Hammond, Indiana. South Chicago 1445—Sheffield 1530. New York Office—1 Madison Ave., CAledonia 5-6323. Chicago Office—332 So. Michigan Ave. Wabash 2640

Consolidated Film Industries, 1790 Broadway, New York City. COlumbus 5-1776

Consolidated Lithographing Corporation, Grand St. & Morgan Ave., Brooklyn 6, N. Y. EVergreen 8-6700

Consolidated Production Service, Inc., 305 E. 45th Street, New York 17, N. Y. MURray Hill 6-9120

Cooper & Cohen, Inc., 313 West 37th Street, New York, N. Y. MEdallion 3-5696-7-8

Copeland Displays, Inc., 537 W. 53rd St., New York, N. Y. COlumbus 5-5621

Correct Printing Co., 150 Lafayette St., New York 13. CAnal 6-3552

Cosmo Printing Co., 202 Centre St., New York City. CAnal 6-1238

Coxhead, Ralph C. Corporation, 333 Avenue of the Americas, New York 14, N. Y. CHelsea 2-8760 & PLaza 5-6630

Crafton Graphic Co., Inc., 229 W. 28th Street, New York, N. Y. PEnnsylvania 6-5380

Crane-Howard Lithograph Co., The, 1435 E. 12th St., Cleveland, Ohio. Cherry 5352

Crescent Linotyping Corp., 152 East 23rd Street, New York, N. Y. GRamercy 5-4279

Cresset Co., 110 Greenwich, New York, N. Y. BOwling Green 9-0826

Crocker, Burbank Papers, Inc., Fitchburg, Mass. Fitchburg 3. 475 Fifth Avenue, New York, N. Y. MURray Hill 3-9645. 111 W. Washington St., Chicago, Ill. Franklin 1880

Crocker, McElwain Co., Holyoke, Mass. 9825

Cromwell Co., The, 21 Warren St., New York, N. Y. BArclay 7-3569

Crosley, Thos. H., Co., The 17 Rose Street, New York, N. Y. BEekman 3-1761

Crowell, F. A., Inc., 209 West 38th St., New York 18, N. Y. WIsconsin 7-6346

Crowell-Collier Publishing Co., The, 250 Park Avenue, New York, N. Y. ELdorado 5-5200

D

Davey Co., The, 164 Laidlaw Ave., Jersey City 8, N. J. JOurnal Sq. 2-0606

Davidson Mfg. Co., 1020 W. Adams St., Chicago, Ill. Hay 1830

Davis, Delaney, Inc., 141 East 25th St., New York 10, N. Y. MURray Hill 6-2500

Dayton's Typographic Service, 223 South Ludlow St., Dayton, Ohio.

Decalcomania Specialties Co., 711 Spring Garden, Philadelphia, Pa. Walnut 2-6066

Dee, Laura, 637 Madison Avenue, New York 22, N. Y. ELdorado 5-8138

De Haan, Inc., 60 East 11th St., New York, N. Y. OREgon 4-6600

De La Mare Co., A. T., Inc., 448 West 37th St., New York, N. Y. MEdallion 3-0520-1-2-3-4

Dennison & Sons, 35-37 36th St., Long Island City, N. Y. AStoria 8-1200

Detroit Typesetting Company, 1959 East Jefferson Avenue, Detroit 7, Mich. Fitzroy 5970

Devoe & Raynolds Co., Inc., 44th St. & 1st Ave., New York, N. Y. MURray Hill 4-4430

Diamant Typographic Service, Inc., 140 W. 17th St., New York 11, N. Y. WAtkins 9-0717

Dickie-Raymond Inc., 80 Broad Street, Boston 10, Mass. Hancock 3360. 521 Fifth Ave., New York 17, N. Y. MURray Hill 2-5330

Dill & Collins, Inc., 814 Public Ledger Building, Philadelphia 6, Pa. LOmbard 3-5530

Dillon Co., J. C., Inc., 227 East 45th St., New York, N. Y. MUrray Hill 2-5285

Dimensional Arts, Inc., 487 Park Ave., New York, N. Y. ELdorado 5-7689

Direct Mail Envelope Co., Inc., 200 Hudson Street, New York, N. Y. WAtkins 9-9073

Downing Letter Co., 9-15 Murray Street, New York, N. Y. BArclay 7-5236

Downtown Typesetter, Inc., The, 200 Hudson Street, New York 13, N. Y. WOrth 4-6335

E

Eagle Pencil Co., 703 East 13th St., New York 9, N. Y. ALgonquin 4-2500 & SPring 7-5600

Eagle Regalia Co., 298 Broadway, New York, N. Y. WOrth 2-2260

Eastern Corporation, Bangor, Maine. Bangor 8221

Ecusta Paper Corporation, Pisgah Forest, North Carolina. Brevard 303; 9 Rockefeller Plaza, New York, N. Y. CIrcle 6-4864

Edwards Typography, A. T., Inc., 209 W. 38th St., New York, N. Y. WIsconsin 7-4026

Efficient Direct Mail Service, Inc., 52 E. 19th St., New York, N. Y. GRamercy 3-2500

Eilert Printing Co., Inc., 318 W. 39th St., New York 18, N. Y. MEdallion 3-0300

Electric Boat Co., Printing Machinery Division, 445 Park Ave., New York 22, N. Y. ELdorado 5-3900. 400 Madison Street, Chicago 6, Ill. ANdover 6523

Electro Sun Co., Inc., 161 Washington Street, BArclay 7-2334-5; 70 East 46th Street. MURray Hill 6-6526-7-8-9-6530. 157 Chambers Street. DIgby 9-1260-61

Electronic Mechanical Products Co., 13 North Virginia Ave., Atlantic City, New Jersey 4-6557-8

Electrotype Correction Co., Inc., 225 Varick St., New York, N. Y. WAtkins 4-6690-1

Elliot Electrotype, Stereotype & Mat Co., Inc., 461 Eighth Ave., New York 1, N. Y. MEdallion 3-5026

Empire Photo-Engraving Corp., 207 Market St., Newark, N. J.

Mitchell 2-4088; 290 George St., New Brunswick, N. J. NEw Brunswick 2-3800

Empire State Craftsmen, Inc., 115 E. 23rd St., New York, N. Y. GRamercy 7-3373

Evans-Winter-Hebb Inc., 818 Hancock Avenue West, Detroit 1, Mich. Temple 1-5000

Ever Ready Label Corporation, 137 E. 25th St., New York, N. Y. MUrray Hill 4-4300

Exclusive Envelope Corp., 216 William Street, New York 7, N. Y. BEekman 3-5950

F

Falulah Paper Co., Fitchburg, Mass. Fitchburg 2170;500 Fifth Ave., New York 18, N. Y. CHickering 4-5028

Faultless Press, 124 White St., New York, N. Y. CAnal 6-5150-1

Federal Lithograph Co., (True Color Photo Transparencies) 858 West Fort Street, Detroit 26, Michigan. Cadillac 2134

Fell Co., Wm. F., Printers, 1315 Cherry St., Philadelphia 7, Pa. SP 4-2390

Fidelity Press, D St. and Tioga, Philadelphia 34, Pa. RE 9-6670

Fisher Bookbinding Co., Inc., 228 E. 45th Street, New York 17, N. Y. MUrray Hill 2-0058

Fisher Printing Co., 270 Lafayette St., New York. CAnal 6-0791

Flax, Sam, 40 East 28th St., New York, N. Y. MUrray 3-2962-3

Flex Craft Bindery, The, 237 49th Street, Brooklyn, N. Y. GEdney 9-5141

Flexo-Lettering Co., 34 W. 46th Street, New York, N. Y. LOngacre 5-1412

Flower Steel Electrotype Co., 461 Eighth Avenue, New York, N. Y. MEdallion 3-3126; 216 William Street, BEekman 3-1330

Forbes Lithograph Mfg. Co., P.O. Box 513, Boston, Mass. Chelsea 0800; 10 E. 40th St., LExington 2-9820; Chicago, Ill. Superior 7780; Sibley Towers Bldg., 25 No. St., Rochester; Cleveland, Ohio, Cherry 5410

Ford Co., J. W., 108 W. Central Parkway, Cincinnati, Ohio. Cherry 6410

Fototype Co., 1416 Roscoe St., Chicago, Ill. BIttersweet 8816

Francis Press, Charles, Inc., 461 Eighth Avenue, New York 1, N. Y. MEdallion 3-3500

Frederick Photogelatine Press, Inc., 438 West 37th St., New York 18, N. Y. MEdallion 3-3340

Freedman Cut-Outs, 117 West 17th Street, New York, N. Y. WAtkins 9-0176

Freedman Die Cutters, William A., Inc., 10 W. 20th Street, New York, N. Y. CHelsea 3-0233

Friedman, A. I., Inc., 20 East 49th Street, New York, N. Y. PLaza 5-3326

G

Gamma Displays, Inc., 92 Liberty Street, New York, N. Y. COrtlandt 7-9256

Ganer Linotype Craftsmen, 305 E. 45th St., New York, N. Y. MURray Hill 4-3048

Gardiner Binding & Mailing Co., 304 Hudson St., New York, N. Y. WAlker 5-2351

Garraway Co., The, Rutherford, N. J. Rutherford 2-0598

Gatchel & Manning, 230 South 7th, Philadelphia, Pa. Lombard 3-1700

Geiger Bros., 16-34 Nesbitt St., Newark 4, N. J. HUmboldt 3-1332

General Binding Corp., 812 W. Belmont Ave., Chicago 14, Ill. Diversey 3700

General Composition Company, 470 Atlantic Ave., Boston, Mass. Liberty 8063

General Envelope, 25 South Street, Boston, Mass. Hancock 8600

General Offset Co., Inc., 34 Hubert Street, New York 13, N. Y. WAlker 5-1700

General Pencil Company, 67-73 Fleet Street, Jersey City 6, N. J. JOurnal Square 2-5351

General Printing Ink Division, Sun Chemical Corporation, 100 Sixth Avenue, New York 13, N. Y. CAnal 6-1000. Branches in all major cities

General Tag Co., 130 W. 42nd St., New York. WIsconsin 7-2894

Georgian Press, Inc., 175 Varick St., New York, N. Y. WAtkins 4-4820 & WAtkins 4-7478

Gilliams & Rubin, Inc., 225 W. 39th St., New York, N. Y. PEnnsylvania 6-0845

Githens-Sohl Corp., 203 E. 12th St., New York. GRamercy 7-7910

Glatfelter Co., P. H., Spring Grove, Pa. Tel. 63

Globe Electrotype Co., Inc., 240 West 40th St., New York 18, N. Y. MEdallion 3-2610

Globe Engraving & Electrotyping Co., 711 South Dearborn Street, Chicago, Ill. Harrison 5305

Globe Mail Service, Inc., 148 West 23rd Street, New York, N. Y. CHelsea 3-7390

Goat Co., Fred, Inc., Swing-O-Ring Div., 314 Dean Street, Brooklyn, N. Y. TRiangle 5-0940

Grant Photo Products, Inc., 395 4th Avenue, New York, N. Y. MUrray Hill 5-1576

Graphic Arts Products, 1959 East Jefferson Ave., Detroit 7, Michigan

Graphic Arts Typographers, Inc., 228 E. 45th St., New York, N. Y. MUrray Hill 2-5210

Graphic Photo Engraving Co., Inc., 207 W. 25th Street, New York, N. Y. WAtkins 4-8844

Gray Envelope Mfg. Co., Inc., The, 21-83 33rd St., Brooklyn 32, N. Y. STerling 8-2900

Gray, James, Inc., 216 E. 45th Street, New York 17, N. Y. MUrray Hill 2-9000

Gray Printing Co., North & Cadwalader Sts., Fostoria, Ohio. Phone: 638

Greater N. Y. Ruling Co., 200 Hudson Street, N. Y. WAlker 5-2660 and 5-6448

Green & Low Paper Co., Inc., 175 Varick St., New York 14, N. Y. WAtkins 4-8160

Griffin Miller Bates Co., Inc., 52 East 19th Street, New York, N. Y. ALgonquin 4-3763

Grinnell Lithograph Co., Inc., 406 West 31st St., New York, N. Y. CHickering 4-0033

Grumbacher, M., 460 West 34th Street, New York 1, N. Y. BRyant 9-6400

Gugler Lithographic Company, 1339 N. Milwaukee Street, Milwaukee 2, Wisconsin. Daly 6969

H

Heber Linotyping Co., Inc., 245 Seventh Avenue, New York 1, N. Y. WAtkins 9-3592

Hagstrom Co., Inc., 20 Vesey St., New York. COrtlandt 7-8790

Hall Company, The J. C., 21 Sabin Street, P.O. Box 1060, Pawtucket, R. I. Perry 9512

Handcraft Press, 13 West 36th St., New York 18, N. Y. WIsconsin 7-1253

Harding Photo Engraving Company, 216 West 18th Street, New York 11, N. Y. CHelsea 3-0680

Hamilton Manufacturing Company, Two Rivers, Wisconsin. Telephone: 351

Hammermill Paper Co., East Lake Rd., Erie, Pa. Phone 44-41: 50 East 42nd St., New York, N. Y. VAnderbilt 6-0312

Harris-Seybold Co., 4510 E. 71st Street, Cleveland 5, Ohio. 75 Varick St., New York, N. Y. WAlker 5-7101

Hayden & Co., E. J., Inc., 118 East 25th Street, New York 10, N. Y. GRamercy 3-4031

Hayes-Lochner, Inc., 160 E. Illinois St., Chicago, Ill. Whitehall 6116

Haynes Lithograph Company, Inc., Silver Spring, Maryland. Phone: Sligo 8000

Heinrich, H. H., Inc., 200 Varick Street, New York 14, N. Y. WAtkins 4-6970-1

Higgins-McArthur Co., 302 Hayden St., N.W., Atlanta, Ga. Walnut 3306

Highton, Alex G., Inc., 224 Market Street, Newark 2, N. J. MArket 2-7677

Hill, R. O. H., Inc., 270 Lafayette St., New York 12, N. Y. CAnal 6-6340

Hinkhouse, Inc., 121 Varick Street, New York 13. CAnal 6-7577

Hobson Miller Paper Co., Inc., 280 Lafayette Street, New York, N. Y. BArclay 7-9034

Hochstadt Co., F., Inc., 18 Vesey Street, New York, N. Y. REctor 2-3444-5-6

Holliston Mills, Inc., 70 West 40th Street, New York, N. Y. WIsconsin 7-2180

Holyoke Card and Paper Co., 95 Fisk Avenue, Springfield, Mass. Tel. 2-2107

Hooven Letters, Inc., 352 4th Ave., New York, N. Y. LExington 2-6162

Hopp Press, The, Inc., 460 W. 34th Street, New York 1, N. Y. BRyant 9-1803

Horan Engraving Co., Inc., 44 West 28th Street, New York, N. Y. MUrray Hill 4-6224

Branch office: 30 Fulton Street, Newark 2, New Jersey. MArket 2-4172

Huber, J. M., Inc., 620 62nd Street, Brooklyn, N. Y. GEdney 9-5370

Huebner Laboratories, 305 E. 46th St., New York, N. Y. MUrray Hill 8-1430

Hunt Pen Co., 7th & State Sts., Camden, N. J. Camden 38

Hurst Linotypers, Inc., 52 E. 19th Street, New York, N. Y. GRamercy 7-3173

Hygrade Printing & Stationery Co., 121 Varick Street, New York, N. Y. WAlker 5-0737

I

I X L Printing Co., 82 Cooper Sq., New York. ALgonquin 4-3496-7

Illinois Photo Gravure Co., 466 W. Superior Street, Chicago, Illinois. Delaware 6950

Imperial Engraving Co., Inc., 122 Spring St., New York, N. Y. CAnal 6-5037

Inland Press, The, Inc., 600 W. Van Buren Street, Chicago, Illinois. Central 0762

Intaglio Service Corp., 305 E. 46th St., New York, N. Y. PLaza 5-7441

International Business Machines Corporation, 590 Madison Avenue, New York, N. Y. PLaza 3-1900

International Paper Co., 220 E. 42nd Street, New York, N. Y. MUrray Hill 2-7500

International Printing Ink, 636 11th Avenue, New York, N. Y. CIrcle 6-7900. Branches in all major cities

Intertype Corporation, 360 Furman Street, Brooklyn, N. Y. MAin 4-6600

J

Jaffe, Arthur, Inc., 3 East 28th St., New York, N. Y. LExington 2-8043

Jaffe, Herman, 27 East 21st St., New York 10, N. Y. GRamercy 5-9809

Jahn & Ollier Engraving Company, 817 West Washington Boulevard, Chicago 7, Illinois. Monroe 7080

Jennings, Albert O., Inc., 52 Duane Street, New York, N. Y. WOrth 2-1954

Jones, E. Willis, 111 East Delaware St., Chicago, Illinois. Delaware 8405

Jordan, Alfred J., Inc., 1220 Sansom St., Phila., Pa. Pennypacker 6450, Race 5446

Judson Type, Inc., 151 W. 23rd St., New York, N. Y. WAtkins 9-8610

K

Kable Brothers Company, Mt. Morris, Illinois. Mt. Morris 36. Chicago office: 8 South Dearborn St. Central 2906. New York office: 420 Lexington Ave. MOhawk 4-5870

Keystone Photo Engraving Corporation, 244 W. 49th Street, New York, N. Y. CIrcle 6-5585

Kindred, MacLean & Company, Inc., 43-01 22nd St., Long Island City 1, N. Y. STillwell 4-7212

King Typographic Service Corp., 330 W. 42nd St., New York, N. Y. MEdallion 3-4423

Kingsboro Electrotype Corp., 300 Adams St., Brooklyn, N. Y. MAin 4-6740

Kleen-Stik Products Co., 2611 So. Indiana Ave., Chicago 16, Illinois. Victory 2804

Kline Linotyping Co., Inc., 146 W. 25th St., New York, N. Y. CHelsea 3-3610

Knapp Engraving Co., Inc., 141 E. 25th St., New York 10, N. Y. MUrray Hill 4-6870

Knickerbocker Electrotype Co., 424-33 W. 33rd St., New York, N. Y. CHelsea 4-0915-6-7

Koppelman Co., Inc., 333 Hudson Street, New York 13, N. Y. WAlker 4-1110

L

Lafayette Linotyping Co., 270 Lafayette Street, New York, N. Y. CAnal 6-4268

Lansky Die Cutting Co., 194 Greene Street, New York 12, N. Y. GRamercy 7-5767

Lanston Monotype Machine Co., 24th at Locust St., Philadelphia 3, Pa. SPring 4-4618

Lasky Co., Inc., 220 Elizabeth Ave., Newark, N. J. BIgelow 2-2411

Lathrop Paper Co., Inc., 461 Eighth Avenue, New York, N. Y. LAckawanna 4-8400

Laurel Process Co., Inc., 480 Canal Street, New York 13, N. Y. WAtkins 4-5600

Laurel Systems Co., Inc., 480 Canal Street, New York 13, N. Y. WAtkins 4-5600

Lenz & Riecker, Inc., 75 Varick St., New York, N. Y. WAlker 5-9394

Leventhal, Oscar, Inc., 229 W. 28th St., New York 1, N. Y. PEnnsylvania 6-6393

Lewis, Ben, 16 E. 52nd St., New York 22, N. Y. PLaza 3-2870

Lind Brothers, 309 Lafayette St., New York 12, N. Y. WAlker 5-1837

Linde Co., J. E., Inc., 111 Eighth Avenue, New York 11, N. Y. CHelsea 3-6000

Lindenmeyr, Henry & Sons, 480 Canal Street, New York, N. Y. CAnal 6-5600; 71 Clinton St., Newark 5, N. J. MArket 2-5638; 117 Spruce St., Hartford 1, Conn. Hartford 2-3167

Lithographers' Finishing Co., 224 Center Street, New York, N. Y. CAnal 6-5171

Lobel-Williams, 313 West 37th Street, New York, N. Y. MEdallion 3-5352

Lotz Photo-Engraving Co., 12th & Cherry Sts., Philadelphia, Pa. Walnut 6478

Ludlow Typograph Company, 2032 Claybourn Ave., Chicago 14, Illinois. Lincoln 5151

Lutz & Sheinkman, 421 Hudson St., New York 19, N. Y. Phone WAtkins 4-2000

Lyons Press, T. J., 4 Brighton Avenue, Boston, Mass. STadium 2-6510

M

M & L Typesetting and Electrotyping Co., 4001 North Ravenswood Ave., Chicago, Illinois. Lakeview 8201

McGraw-Phillips Printing Co., 318 W. 39th St., New York, N. Y. MEdallion 3-3170

McKeever & Morris, Inc., 108 Greenwich Street, New York, N. Y. WHitehall 4-3624

McKenzie Service, Inc., 95 Morton St., New York, N. Y. WAtkins 4-8300

McKibbin & Son, George, Third Avenue, 33rd to 34th Sts. Brooklyn, N. Y. STerling 8-2470

Machine Composition Co., 470 Atlantic Ave., Boston, Mass. LIberty 2-1693

Magill-Weinsheimer Company, 1320-1334 South Wabash Ave., Chicago 5, Illinois. Harrison 3880

Maher Printing Co., John, 2001 So. Calumet St., Chicago 16, Illinois. Victory 0300

Mail & Express Printing Co., Inc., 160 Varick St., New York, N. Y. WAlker 5-0580

Mailograph Co., Inc., 39 Water St., New York 4, N. Y. BOwling Green 9-7777

Majestic Paper Corp., 138 Franklin St., New York, N. Y. CAnal 6-1475

Majestic Photo Engraving Company, Inc., 116 E. 27th Street, New York, N. Y. LExington 2-8780

Mallon, Peter F., Inc., Court Sq., Long Island City 1, N. Y. STillwell 4-9100

Marbridge Printing Co., Inc., 225 Varick Street, New York, N. Y. WAtkins 4-8660

Marquardt & Co., Inc., 153 Spring St., New York, N. Y. CAnal 6-4563

Masta Displays, Inc., 230 W. 17th St., New York, N. Y. CHelsea 2-3717

Master Typographers, Inc., 209 W. 38th St., New York, N. Y. WIsconsin 7-6272

Matthews Photo Engraving Co., 145 Hudson St., New York, N. Y. WAlker 5-4962

The Mead Sales Company, Inc., 230 Park Ave., New York 17, N. Y. MUrray Hill 6-7200

Mead Sales Company, The, 20 North Wacker Drive, Chicago 6, Ill. DEarborn 2502; 131 No. Ludlow St., Dayton 2, Ohio.

Melnick Bindery, 195 Chrystie St., New York, N. Y. GRamercy 5-6499

Mercury Photo Engravers Corp., 461 Eighth Ave., New York, N. Y. LOngacre 5-7622

Mercury Printing Co., 200 Hudson St., New York, N. Y. WAlker 5-0676

Mergenthaler Linotype Company, 29 Ryerson St., Brooklyn 5, N. Y. ULster 5-0300

Mevi Company, The, 801 3rd Ave., New York 22, N. Y. PLaza 8-2908

Meyer & Co., John C., 129 No. 12th St., Philadelphia, Pa. Walnut 2-4120

Michigan Book Binding Co., 1036 Beaubien, Detroit, Mich. Randolph 5444

Middleditch Company, L., 75 Varick St., New York 13, N. Y. WAlker 5-4044

Mid-States Gummed Paper Co., 2515 South Damen Ave., Chicago 8, Illinois. Virginia 6300

Midtown Plate Correction Corp. 251 W. 40th St., New York 18, N. Y. LOngacre 4-0890

Miehle Printing Press & Mfg. Co., Main office Chicago, Illinois. N. Y. office, 330 W. 42nd Street, N. Y. MEdallion 3-1580

Millar, Geo. W., & Co., Inc., 284 Lafayette St., New York, N. Y. CAnal 6-0880

Milton Paper Co., Inc., 119 W. 24th Street, New York 11, N. Y. WAtkins 9-6721

Mitchell Converse Hodges, 55 W. 42nd St., New York, N. Y. CHickering 4-6584

Monsen-Chicago, Inc., 22 East Illinois St., Chicago 11, Illinois. Superior 1223

Monsen-Los Angeles, 928 So. Figueroa St., Los Angeles 15, California. TRinity 8754

Moore & Co., Inc. 113 South St., Baltimore, Md. Plaza 1859

Moore Business Forms, Inc., 900 Buffalo Ave., Niagara Falls, N. Y. Niagara Falls 7891

Mosstype Corporation, 33 Flatbush Ave., Brooklyn, N. Y. STerling 3-5910

Munising Paper Co., The, 135 So. La Salle St., Chicago, Illinois. State 4533

N

National Artist Materials Company, Inc., 480 Lexington Ave., New York City 17, N. Y. WIckersham 2-7472

National Electrotype Co., 227 E. 45th St., New York, N. Y. MUrray Hill 2-4700

National Process Company, Inc., 75 Varick St., New York, N. Y. CAnal 6-0366

National Publishing Co., 239 S. American St., Philadelphia, Pa. LOmbard 3-1875

National Typographic Service, 318 W. 39th St., New York 18, N. Y. BRyant 9-5077

Nesmith, R. I., 50 E. 42nd St., New York 17. MUrray Hill 2-5177

New Era Letter Company, Inc., 47 West Street, New York 6, N. Y. WHitehall 3-2700

New Era Manufacturing Co., 375 11th Ave., Paterson, N. J. Sherwood 2-4100

New York Electrotyping Co., 311 West 43rd St., New York, N. Y. CIrcle 6-6295

New York Gravure Co., 305 East 45th St., New York, N. Y. MUrray Hill 4-7730

Newman-Rudolph Lithographing Co., 400 South Jefferson St., Chicago 7, Illinois. Dearborn 5540

Norman Press, The, 510 North Dearborn St., Chicago, Illinois. Whitehall 8212

Northwest Paper Company, The, Cloquet, Minnesota.

O

Oakland Textile Co., 381 4th Ave., New York, N. Y. MUrray Hill 3-5182

O'Brien, Chas. D., Inc., 209 W. 38th Street, New York, N. Y. WIsconsin 7-6314

Old Colony Envelope Co., Westfield, Mass. Phone: 571; 50 Church St., New York, N. Y. REctor 2-9068

Oldach Company, 525 Locust St., Philadelphia, Pa. LOmbard 3-6450

Oneida Paper Products, Inc., 10 Clifton Boulevard, Clifton, N. J. PAssaic 3-5600

Orthwine Corp., Rudolph, 516 West 34th St., New York, N. Y. MEdallion 3-5900

Oxford Paper Co., 230 Park Ave., New York 17, N. Y. MUrray Hill 6-8700; 35 E. Wacker Drive, Chicago 1, Ill. Central 0855

P

Palm Brothers Decalcomania Co., The, 3706 Regent Ave., Cincinnati 12, Ohio. Melrose 5681; New York: 248 West Broadway. WAlker 5-4235; Chicago: 6349 N. Clark Street. Rogers Park 0173

Palm, Fechteler & Co., 220 W. 42nd St., New York 18, N. Y. WIsconsin 7-3603

Pantone Press, Inc., 461 8th Ave., New York 1, N. Y. BRyant 9-5088

Paper Center, The, Inc., 133 W. 20th Street, New York 11, N. Y. BEekman 3-5630

Paper Sales Corporation, 41 Park Row, New York 7, N. Y. WOrth 2-1280

Parkway Printing Co., Inc., 400 Lafayette St., New York, N. Y. SPring 7-3337

Parsons Paper Co., 84 Sargeant St., Holyoke, Mass. Holyoke 7394

Partridge & Anderson Co., 712-732 Federal St., Chicago, Ill. Harrison 3732

Patrick, William, Inc., 16-22 Lawrence St., Newark 5, N. J. MArket 3-1131

Pebbling Company, The, Inc., 145 Hudson St., New York 13, N. Y. WAlker 5-6358

Peerless Sample Card Co., Inc., 443 Greenwich St., New York 13, N. Y. WAlker 5-3374

Philadelphia Bindery, The, Inc., 256 N. Third Street, Philadelphia 6, Pa. MAin 7-3333

Phillips, Frederic Nelson, Inc., 305 E. 45th St., New York 17, N. Y. MUrray Hill 4-3940

Philmac Typographers, 326 W. 39th St., New York, N. Y. MEdallion 3-3170

Photogravure and Color Company, 207 West 25th St., New York 1, N. Y. WAtkins 4-4840

Phototrix Co., 110 W. 40th St., New York 18, N. Y. Phone LOngacre 5-6240

Phototype Engraving Co., Inc., 2121-2141 Market Street, Philadelphia 3, Pa. LOcust 7-0637

Pioneer Letter Co., 218 W. 34th St., New York, N. Y. LAckawanna 4-1332-3

Pioneer-Moss, Inc., 460 West 34th St., New York, N. Y. MEdallion 3-0440-1-2-3

Plastic Binding Corp., 732 Sherman St., Chicago, Illinois. HARrison 2903

Pitney-Bowes, Inc., Stamford, Conn.

Playbill, Inc., 108 Wooster St., New York 12, N. Y. CAnal 6-5500

Plymouth Printing Co., Inc., 270 Lafayette St., New York, N. Y. CAnal 6-0270

Pontiac Engraving & Electrotype Co., 812 West Van Buren St., Chicago 7, Illinois. Haymarket 1000

Popp, Emil P., & Son, 480 Canal St., New York, N. Y. WAlker 5-4219

Poster Craftsmen, Inc., 410 E. 32nd St., New York, N. Y. MUrray Hill 3-5624

Potdevin Machine Co., 1221 38th St., Brooklyn 18. GEdney 6-1700

Printloid, Inc., 93A Mercer St., New York 12, N. Y. CAnal 6-7393

Progressive Typography, 228 E. 45th St., New York, N. Y. MUrray Hill 2-7094

Providence Lithograph Co., 353 Prairie Ave., Providence, R. I. Williams 1200

Q

Quality Photo Engraving Co., Inc., 216 E. 45th St., New York, N. Y. MUrray Hill 2-2620

R

RKO Pathe, Inc., 625 Madison Avenue, New York 22, N. Y. PLaza 9-3600

Rand Avery-Gordon Taylor, Inc., 8716 Commonwealth Ave., Boston, Mass. STAdium 1300

Ranger-Tennere, Inc., 450 W. 31st Street, New York 1, N. Y. MUrray Hill 3-9803

Rapid Electrotype Co., Cincinnati 14, Ohio. Parkway 3577. 228 East 45th Street, New York, N. Y. VAnderbilt 6-3286. Philadelphia, Pa., Rittenhouse 5902-3-4. Detroit, Mich. Madison 6780. San Francisco, Calif. Douglas 8427. Chicago, Ill. Superior 2782. Atlanta, Georgia. Walnut 8113

Rau, Herbert W., 59 East 4th Street, New York, N. Y. ORegon 4-1425

Rau Rubber Engraving Co., 59 East 4th Street, New York, N. Y. ORegon 4-1425

Read Printing Co., Inc., 350 Hudson Street, New York 14, N. Y. WAtkins 4-4630

Real Typographers, Inc., 239 W. 39th St., New York, N. Y. LAckawanna 4-4850-1

Reilly Electrotype Co., Inc., 305 E. 45th Street, New York, N. Y. MUrray Hill 6-6350

Reinhold-Gould, Inc., 535 5th Ave., N. Y. VAnderbilt 6-2100

Reliable Press, Inc., 148 Lafayette St., New York, N. Y. CAnal 6-3174

Remington Rand, Inc., 315 Fourth Avenue, New York 10, N. Y. SPring 7-8000. 210 King St. W., Toronto 1, Ontario. Elgin 6241

Reply-O-Letters, 150 West 22nd Street, N. Y. CHelsea 2-1156

Ridley, John Walter, 30 W. 15th Street, New York, N. Y. CHelsea 2-6887

Riegel Paper Corporation, 342 Madison Avenue, New York, N. Y. MUrray HIll 2-4900

Roberts, Lewis, Inc., 17 Rose Street, New York, N. Y. BEekman 3-3496

Rochester Monotype Composition Co., Inc., 77 South Avenue, Rochester, N. Y. Stone 3379

Rode & Brand, Inc., 200 William Street, N. Y. BEekman 3-3840

Rogers Engraving Co., 2001 Calumet Ave., Chicago. Calumet 4137

Rogers-Kellogg-Stillson, Inc., 461 Eighth Avenue, New York, N. Y. BRyant 9-5000

Rolled Plate Metal Co., 196 Van Brunt St., B'klyn, N. Y. MAin 4-1170

Rosco Laboratories, 367 Hudson Avenue, Brooklyn 1, N. Y. CUmberland 6-3786

Royal Electrotype Co., 1309 Noble St., Philadelphia, Pa. Poplar 2664. Boston: 594 Newberry St. Kenmore 4260

Royal-Jones Photo Engraving Corporation, 305 East 45th Street, New York City. MUrray Hill 4-0400. 1027 Arch Street, Phila. MArket 7-1990

Royal Paper Corp., 210 11th Ave., New York, N. Y. WAtkins 4-3400

Royal Typewriter Company, Inc., 2 Park Avenue, New York, N. Y. MUrray Hill 3-4800

Rumford Press, The, 341 Madison Ave., N. Y. 17. MUrray Hill 9-4095

Russell-Rutter Co., Inc., 461 8th Avenue, New York 1, N. Y. MEdallion 3-2650

Russo, F. A., Inc., 480 Lexington Avenue, New York, N. Y. PLaza 5-4700

Ruttle, Shaw & Wetherill, Inc., 116 E. 19th Street, New York,

N. Y. COrtlandt 7-3580. 1215-17-19 Cherry St., Phila. 7, Pa. LO. 7-7175

S

Safran, Hyman, Printing Co., 6543 Sylvester Street, Detroit 7, Michigan. Plaza 4560

Sahlin, Axel E., Typog. Service, 295 Delaware Ave., Buffalo, N. Y. Phone: Buffalo, Washington 5097

St. John Associates, Inc., The, 79 West 45th Street, New York, N. Y. BRyant 9-4292

Sales Presentations, 47 Great Jones St., New York, N. Y. GRamercy 7-6934

Salley & Collins, 305 E. 45th St., New York, N. Y. MUrray Hill 4-6524

Schirmer, Arthur B., Inc., 57 Warren St., New York, N. Y. COrtland 7-5459 & BEekman 3-9189

Schlosser Paper Corp., 350 Hudson Street, New York 14, N. Y. WOrth 2-3800

Schmidt, Frederick W., Inc., 228-238 East 45th Street, New York 17, N. Y. VAnderbilt 6-3550

Schneider Press, Inc., 216 West 18th Street, New York, N. Y. WAtkins 9-5566

Sheppard, C. E. Co., 44-01 21st St., Long Island City, N. Y. STillwell 4-6000

Sheridan, T. W. & C. B., Co., 135 Lafayette Street, New York 13, N. Y. CAnal 6-4431

Shoemaker & Co., 2 Duane St., New York, N. Y. BEekman 3-2510-1

Siebold, J. H. & G. B., Inc., 47 Watts Street, New York, N. Y. WAlker 5-5565

Simon Adhesive Products Corporation, 220 Fifth Avenue, New York 1, N. Y. BRyant 9-1482

Sinclair and Valentine Company, 611 W. 129th Street, New York, N. Y. UNiversity 4-0800. Branches in all major cities.

Sloves Mechanical Binding Co., Inc., 121 Varick Street, New York 13, N. Y. WAlker 5-0304

Smith, Frederick, 11 West 42nd Street, New York 18, N. Y. WIsconsin 7-2438

Solfleisch, Henry W., Company, 132 White Street, New York, N. Y. CAnal 6-6168

Smith, S. K. Co., The, 2857 North Western Ave., Chicago 18, Ill. Armitage 3790. 52 Vanderbilt Ave., New York 17, N. Y. MUrray Hill 9-8290. 332 South La Brea Ave., Los Angeles 36, Cal. York 1934

Smith and Welsh, Printers, 470 Atlantic Avenue, Boston, Mass. Liberty 7016

Spaulding Moss Co., 42 Franklin Street, Boston, Mass. LIBerty 3000

Sperandio's All-Art Studio, 22 North William St., New York 7, N. Y. BArclay 7-0075

Sperry Corporation, The, Ford Instrument Bldg., 31-10 Thomson Avenue, Long Island City 1, N. Y. STillwell 4-9000. 2675 University Ave., St. Paul 4, Minn. Nestor 7151. 2400 W. Madison St., Chicago 12, Ill. Monroe 3480

Spiral Binding Co., Inc., 406 W. 31st Street, New York, N. Y. WIsconsin 7-0800. 54 Winter St., Holyoke, Mass. Holyoke 7984. 111 North Canal St., Chicago, Ill. Central 2023-4-5. 1101 Power Avenue, Cleveland, Ohio. Prospect 0177

Standard Bindery, 411 Russell Street, Detroit, Michigan. Cadillac 3395

Standard Linotypers, The, 17 Vandewater Street, New York, N. Y. BEekman 3-2657

Standard Service, 5 Beekman Street, New York, N. Y. WOrth 2-2965

Standard Tag Company, 65 Duane Street, New York, N. Y. WOrth 2-3296

Starkey & Co., 9-15 Murray St., New York, N. Y. REctor 2-4267

Sterling Engraving Co., 304 E. 45th St., New York, N. Y. MUrray Hill 4-0715

Stevens-Nelson Paper Corporation, 109 East 31st Stret, New York 16, N. Y. CAledonia 5-6170

Strathmore Paper Company, West Springfield, Mass. Phone: 6-8301. 25 West 43rd Street, New York, N. Y. PEnnsylvania 6-2883

Strobridge Lithographing Co., The, 250 Park Avenue, New York, N. Y. WIckersham 2-9567. Cleveland Office: 1900 Euclid Ave. Cherry 5511. Chicago Office: 22 No. La Salle. Randolph 9529

Stuyvesant Press Corporation, 445 Pearl Street, New York 7, N. Y. COrtland 7-7443

Supreme Ad Service, 228 East 45th Street, New York, N. Y. VAnderbilt 6-0650

Sweeney Lithograph Co., Inc., 69 Academy Street, Belleville 9, N. J.

Swing-O-Ring, Inc., Div. Goat Co., Fred, Inc., 314 Dean St., Brooklyn, N. Y. TRiangle 5-0940

T

Tauber's Bookbindery, Inc., 200 Hudson St., New York, N. Y. WOrth 4-5621-2-3-4-5

Tavern Printing Corp., The, 30-30 Northern Blvd., Long Island City, N. Y. STillwell 4-0606

Taylor-Made Rule Co., 65 Flatbush Avenue, Brooklyn, N. Y. NEvins 8-0540

Tenak Products, Inc., 610 Federal Street, Chicago, Illinois. HARrison 5994

Terry Linotyping Co., 50 E. 19th St., New York, N. Y. ORchard 4-7280

Tested Sales Producers, Inc., 3 East 14th Street, New York 3, N. Y. CIrcle 5-6447 & CIrcle 7-4372

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Trade Bindery, The, 636 11th Avenue, New York 19, N. Y. CIrcle 6-7890

Transograph Company, 30 W. 15th Street, New York, N. Y. CHelsea 2-6438

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Typographic Service Co., 305 E. 45th Street, New York, N. Y. MUrray Hill 6-6670

Typographic Service, Inc., 1027 Arch Street, Philadelphia 7, Pa. WAlnut 2-1772

Typographic Vogue, 164-66 W. 25th St., New York, N. Y. CHelsea 3-5940-1

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Underwood Corporation, One Park Avenue, New York 16, N. Y. Murray Hill 2-7000

United States Bronze Sign Co., 570 Broadway, New York, N. Y. CAnal 6-4792

United States Envelope Co., 270 Broadway, New York, N. Y. BArclay 7-2101

U. S. Printing & Lithographic Co., 341 Beech Street, Cincinnati 12, Ohio. Jefferson 2160. Sales offices in principal cities.

Upton, E. S. Printing Co., 539 Magazine Street, New Orleans, La. RAymond 1258

Uptown Paper and Envelope Corp., 241 West 64th St., New York 23, N. Y. TRafalgar 7-8700

V

Valley Paper Co., Holyoke, Mass. Holyoke 7301

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Vita Specialties Co., 693-7 Broadway, New York, N. Y. ALgonquin 4-9676

Volk, Kurt H., Inc., 228 E. 45th Street, New York, N. Y. MUrray Hill 2-1839. 127 Cossuth St., Bridgeport, Conn. Bridgeport 5-4118

W

Wagner Photoprint Co., Time and Life Building, Rockefeller Center, New York 20, N. Y. CIrcle 5-4796

Wainick Envelope Co., 245 Seventh Avenue, New York 1, N. Y. WAtkins 9-5300

Walker Engraving Corporation, 141 East 25th Street, New York 10, N. Y. MUrray Hill 4-6690

Walker, Goulard, Plehn Company, Inc., 450 Pearl Street, New York, N. Y. WOrth 2-0050

Warren, S. D., Co., 89 Broad Street, Boston, Mass. Hubbard 5490

Watts, Alfred Allen, Co., Inc., 216 William Street, New York 7, N. Y. WOrth 2-6220. Newark, N. J.: 124 Sussex Ave., HUmboldt 3-5305. Belleville,

N. J.: 740 Washington Ave. BEllville 2-5100

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Weinberger-Myers, 446 West 34th Street, New York 1, N. Y. LOngacre 3-3759

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Williams & Heintz Co., 220 I Street, N.E., Washington 2, D. C. Lincoln 7140

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Wisconsin Cuneo Press, Inc., 239 E. Chicago St., Milwaukee, Wis. Daly 5340

Wood Flong Corporation, 551 Fifth Avenue, New York, N. Y. MUrray Hill 6-8989. Hoosick Falls, N. Y. Hoosick Falls 300

Wright Co., The, 216 High Street, Boston 10, Mass. Hancock 5215

Wright Photo-Offset Co., Inc., The, 55 Vandam St., New York, N. Y. WAlker 5-6850-1-2

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Factual data

The editors have endeavored to restrict all basic material to factual data only. The editorial contributions to this publication are the views and opinions of the respective authors and contributors. This publication does not necessarily endorse these views but presents them in a free form.

Color section

The compilation of the color material on pages 16 to 33 and 40 to 57 was made possible by the wonderful cooperation of many individuals and agencies, with Bradbury Thompson, Art Director of "Mademoiselle," responsible for design and layout. His distinguished career includes design of the Annual of Advertising Art for 1943, and the Art News Annual for the past three years. He has three times won the Art Directors Club annual awards for his work as designer of "Westvaco Inspirations for Printers," where these examples of Mr. Thompson's work first appeared.

The latter publication, house organ of West Virginia Pulp and Paper Co. and produced under the supervision of C. P. Elston, advertising manager, has a long record of achievement. To mention only a few recent awards, it won the Art Directors Club medal for the entire series of booklets issued during 1945, the award for distinctive merit in 1946, the Art Directors Club medal for editorial design in 1947, and an award for distinctive merit for color painting in 1947. It was one of the 50 Direct Mail leaders of 1945 and 1946. C. W. Folks, Rogers-Kellogg-Stillson, Inc., New York, handled the printing production of the layouts as they originally appeared in "Westvaco Inspirations for Printers," and gave valuable assistance to this edition.

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Pictographic diagrams

The idea for a comprehensive set of clear, simple, lucidly captioned diagrams that would graphically portray the basic features of the more important graphic arts processes originated with the editorial staff of "Production Yearbook." As indicated in the Seventh Edition, R. Randolph Karch planned most of the drawings; Harald Torgesen and Norman Schoelles completed them.

The following well-known authorities have checked the pictographs in their respective fields and offered valuable advice and criticism:

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Master paper selector

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